Langley Researcher

VOLUME 4, NUMBER 1 LANGLEY RESEARCH CENTER JANUARY 15, 1965

VAN ATTA, DUNLAP JOIN ERC

Dr. Lester C. Van Atta and Dr. W. Crawford Dunlap will head two of the major research operations at the NASA Electronics Research Center in Cambridge. The appointments were announced by Dr. Winston E. Kock, the Center's Director.

Dr. Van Atta will direct the Center's research efforts in the field of Electromagnetics which includes microwave and optical research areas. Dr. Dunlap will direct the research efforts in the component technology, including the component areas of solid state and materials, and qualification standards. Both men are recognized authorities in their fields.

Dr. Van Atta joins NASA from Lockheed Missiles and Space Company, where he has been Chief Scientist. Following his pioneering work during the war in microwave radar research as head of the antenna group at the MIT Radiation Laboratory, he became successively head of the Antenna Research Branch, U.S. Naval Research Laboratories in Washington, Director, Microwave Laboratory for the Hughes Company and Director of the Hughes Research Laboratories at Malibu, California.

In 1961 he served as Special Assistant on the staff of the Secretary of Defense. He has participated in many Defense Department science study committees, and the National Science Foundation's Committee on the Review of the National Space Science Program, 1962.

(Continued on page 5)

Jack Schmidt (left), Vice-President of the Pilot Life Insurance Company, presents a premium-refund check to Jean Yokum, Chief Accountant, and Mike Pickens, Manager of the Langley Federal Credit Union. The check for $6,498 plus $11,438 paid on 24 claims during the year equals 87.2 per cent of premiums paid as against 86.7 per cent specified in the contract. Qualifying credit union members enjoy the share-life and the loan-life/disability coverage at no out-of-pocket cost.

LANGLEY ASKS BIDS FOR GEODETIC SATELLITE CONTAINER ASSEMBLIES

NASA has asked for bids on the construction of five canister assemblies to be used for launching an Echo-type satellite called PAGEOS into orbit in 1966.

Langley Research Center, which is managing PAGEOS under the direction of NASA's Office of Space Science and Applications, expects interested aerospace firms to file their responses by February 8.

PAGEOS is one of three types of spacecraft to be used in the United States geodetic satellite program. The name is formed from the title Passive Geodetic Earth Orbiting Satellite.

Geodesy is the science of determining the size and shape of the Earth. Geometric geodesy, for which PAGEOS will be used, employs the principles of geometry to map the Earth's surface in a three-dimensional reference system.

The PAGEOS satellite will be a 100-foot inflatable sphere, just like Echo I which has been in orbit since August 12, 1960. It will not use the radio tracking beacons which Echo I carries.

It will be launched into a near-polar orbit from the Western Test Range by a Thrust-Augmented Thor Agena-D (TAT-Agena-D) launch vehicle.

The spherical metal canisters for which bids are being sought will house the folded balloon during the launch phases of flight. When orbital conditions are attained, the canister will separate into two hemispheres, allowing PAGEOS to deploy and inflate into a 100-foot sphere.

PAGEOS is intended to orbit at an altitude of about 2,300 miles. As it reflects the sunlight falling upon it, it will act as a shining point source of light in the sky.

(Continued on page 5

ANNUAL CREDIT UNION MEETING

The Twenty-seventh Annual Meeting of the Langley Federal Credit Union will be held on Monday, January 25 at 7:30 p.m. in the Activities Building.

All members are urged to attend and hear first hand details of a banner year of operations, participate in the election of officers, and hear an address by Dr. Floyd L. Thompson, Director of the Langley Center.

During the meeting, the membership will elect three members to the Board of Directors and four members to the Credit Committee. Any credit union member who would like to be considered for either of these functions should contact one of the following members of the Nominating Committee by January 18: W. L. Williams, Chairman, NASA 2373, Norman S. Silbsy, NASA 3274, or Joseph Strup, Air Force 3931.

A number of door prizes will be given away with the grand prize being an 11-inch portable TV set. Light refreshments will also be served.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, Building 587, telephone 2375.

Editor.....Ruth Angel Verell
Staff Photographer..... Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGED. . .A Center romance reached the engagement stage when Betty Tholl, Full-Scale Research Division, and Thayer Sheets, Personnel Division, announced their plans to wed in June.

REPRESENTATIVE TO VISIT HERE. . .Beverly Beale, Government-wide Service Plan representative, will be here on Wednesday, January 20 from 2 to 3 p.m. Employees having problems or questions concerning the new benefits may call Lois Harris, 2323, for an appointment.

NEWLY WEDS. . .Bonnie Reilly, Public Information Office, took her final vows with John Mertisdorf, Air Force, on December 30. . .Wedding bells rang on December 27 when E. Burton Lightner, Applied Materials and Physics Division, was married to Mary Meekins McNeely, Manteo, North Carolina. The wedding took place in the Mount Olivet Methodist Church in Manteo.

NEW ARRIVALS. . .Arriving just in time to make the income tax deduction deadline was eight pound, eleven ounce Kimberly, daughter of Sarah Coley, Personnel Records. The young lady arrived on December 31. . .Announcing the birth of a seven pound, nine ounce son, Robert Mark, on December 30 are Wilma, Structures Research Division, and Robert Nye, Langley Researcher staff photographer. . . A new son, Eric Jonathan, arrived at the Raymond L. Barger household on December 30. The father works in Full-Scale Research Division. . .Phyllis Evans, Applied Materials and Physics Division, recently became the mother of a daughter, Susan Charlene. . .Linda Hale, formerly of Personnel Division, is the proud mother of a three-month-old adopted daughter, Susan Dianne.

CHANGE OF ADDRESS. . .The Aetna Casualty and Surety Company has moved to new quarters at 3805 Cutshaw St., Richmond. The new mailing address is Group Claim Department, P.O. Box 2447, Richmond, Virginia 23218.

WANTED: Alternate driver from Gloucester Point to W.A. on 8 shift. Hudgins, 4826.
WANTED: Driving combination or ride from Menchville Rd. to W.A. on 7 shift. Marshall, 4483.
WANTED: Driving combination from N. Mallory St. to E.A. on 8 shift. Pearce, 2362.
WANTED: Ride from Forrest Park to W.A. on 8 shift. Neal, 3221.
WANTED: 2 alternate drivers from Norfolk to W.A. on 8 shift. Graves, 4875.

Security Is No Pipe Dream When You Buy U. S. Savings Bonds!

Order FEB-MAR-2 for free mat, 3 col.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of January 18:

Monday - Puree of bean soup, Swiss steak, pork chops, Polish sausage, Irish omelette.

Tuesday - Vegetable-beef soup, Spanish pot roast, grilled Canadian bacon with apple sauce, meat balls and spaghetti, franks and beans.

Wednesday - Chicken noodle soup, grilled sirloin steak, baked ham with plum-raisin sauce, fried chicken, baked hash.

Thursday - Cream of tomato soup, roast ribs of beef, breaded veal cutlet, chicken chow mein on noodles or rice, barbecued sandwich.

Friday - Clam chowder, beef stroganoff on egg noodles, broiled perch, fried fillet of flounder, hot dog.

The menu for the week of January 25 is as follows:

Monday - Tomato-barley soup, roast veal with dressing, grilled pork steak with spiced apple sauce, beef stew, grilled cheese and bacon sandwich.

Tuesday - Split green pea soup, roast beef, barbecued pork chunks over rice, liver and onions, fish cakes and cole slaw.

Wednesday - Cream of potato soup, Spanish pot roast, fried scallops, Salisbury steak, Western omelette.

Thursday - Vegetable-beef soup, grilled T-bone steak, shrimp Newburg, fried chicken, chili con carne.

Friday - Clam chowder, boiled ham, broiled halibut steak, fried flounder, cheeseburger.

WANTED: 2 alternate drivers from Gloucester Point to W.A. on 7:30 shift. Kahlbaum or Hogg, 4845.

OPEN SEASON FOR HEALTH BENEFITS PROGRAM CITED

All employees enrolled in plans under the Federal Employees Health Benefits Program will have an opportunity to change their enrollments during the open season scheduled for February 1-15. Eligible employees who are not enrolled will be able to enroll during this open season. Enrolled employees will be able to make the following changes in their enrollments: from one plan to another, from one option to another in the same or a different plan, and from self only to self and family, or the reverse.

Last October, all enrolled employees were given an up-to-date copy of Standard Form 2809A (The Federal Employees Health Benefits Program), dated November 1964, and a copy of pamphlet BRI 41-117 (Information About Plan Changes Effective November 1964). As was explained then, pamphlet BRI 41-117, along with your November 1963 brochure describing your plan, gives you a complete and up-to-date statement of the benefits and cost of your plan. In addition, the Standard Form 2809A gives you a current summary of general information about the Health Benefits Program.

New brochures will not be distributed for this open season. However, each employee will be given a leaflet informing him of the open season and telling how to change health benefits.

AIAA TO MEET JANUARY 20

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics will meet on Wednesday, January 20 at the Warwick Yacht and Country Club.

Newton W. Cunningham, Ranger Program Manager, NASA Headquarters, will speak on "The Ranger VII Lunar Photographic Mission." The highly successful mission will be briefly reviewed, including the spacecraft description, the mission profile, decisions resulting in the selection of the impact site and the camera performance.

Selected photographs from several spacecraft cameras will be shown and discussed and various interpretations of the photographs by several well-known scientists will be indicated. A 16 mm movie containing pictures from each of the six cameras aboard the spacecraft will be shown. This film was completed on January 5 and begins with the first picture taken from the spacecraft and continues to lunar impact.

As Ranger Program Manager, Cunningham has been responsible for NASA Headquarters management of the Ranger Project since 1962. He received his B.S. and M.S. degrees from the University of Texas and Texas A and M and has been on the Headquarters staff since 1959.

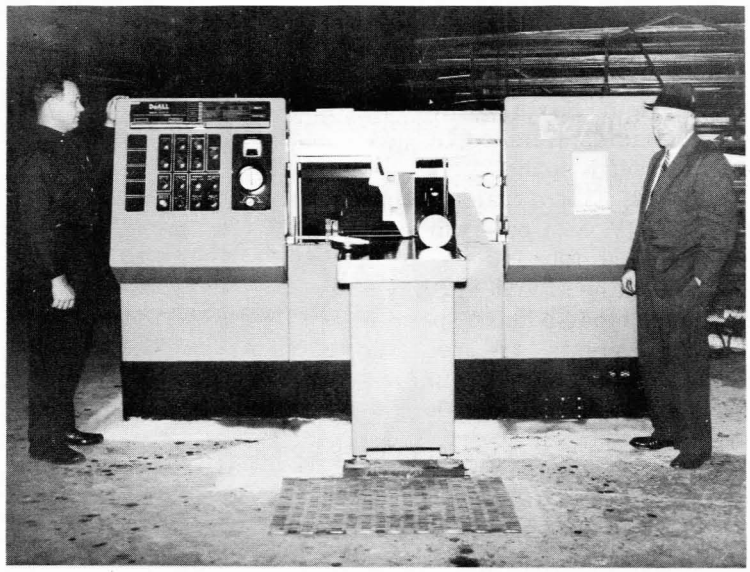
The meeting will be preceded by a social hour at 6 p.m. and dinner at 7. Due to space limitations, only the first 105 reservations will be honored. Reservations may be made by calling L. W. Enderson, 595-6702; Harleth Wiley, LY 6-4427, or Bill Michael, LY 5-0463 by January 18.

WANTED: Alternate driver from Edgehill to E.A. on 8 shift. Costigan, 2245.

WANTED: Girl to share apartment. Linda Queen, 723-0551.

WANTED: Ride from Little Farms Ave. to W.A. on 8 shift. Evans, 4875.

WANTED: Driving combination from Tide Mill Farms to W.A. on 8 shift. Maddalon, 4705.



Ralph L. Hearn (left) and Walter A. Porter, both of Stores Branch, Procurement Division, inspect a new DoAll saw which has been installed in the Warehouse, Building 1195. The saw, which is valued at $27,000, is used for cutting all types of stainless steel and alloy steel.

NEW PAYROLL PROCEDURE CITED

The pay checks distributed to employees yesterday represent earnings for the period December 20-January 2, which constitutes the first pay period in the 1965 tax year. With the pay checks a statement of earnings and deductions was furnished to each employee. This represents the commencement of a new payroll procedure.

In the past, employees only received a statement when there was a change in their pay checks for that particular period. In the future each employee will receive a statement with each pay check which provides a complete breakdown of base pay, other pay, gross pay and all deductions itemized to arrive at the net pay check received. In addition, this statement provides the cumulative earnings and deductions for the current tax year which means that when the last pay check is received in 1965 the cumulative current tax year data will be identical to that which subsequently will be furnished on a W-2 tax form. This will prove convenient for employees who are anxious to complete their Federal tax returns or who are obligated to prepare an estimated earnings by January 15.

Langley's payroll and bond accounting is now being performed on a 1401 IBM Computer, making use of magnetic tapes. This new system enables the Fiscal Division to provide this additional service without loss of payroll preparation time. The new system of furnishing statements with each pay check is consistent with practice in private industry and will enable the employees to see, on a cumulative basis, not only their gross earnings to date, but the individual accumulations of deductions for the various items. It is anticipated that the furnishing of these statements will eliminate the telephonic inquiries currently being made to the Payroll Office to obtain this data.

FOR SALE: Drafting instruments, Leroy lettering set, pos slide rule. R. M. Jones, 596-7396.

WANTED: 5-string banjo. V. Collins, UN 8-9213.

FOR SALE: Wood bunk beds - $30. Powell, 543-0414 Norfolk after 5 p.m.

52 NASA SPACECRAFT ORBIT IN SPACE

NASA reports that of the 70 spacecraft it succeeded in placing into Earth orbit, lunar trajectory or solar orbit since it was established October 1, 1958, 52 are still travelling through space.

Of the 52, 21 are transmitting signals to Earth, including Mariner IV on a path which will take it within 5400 miles of Mars next July 14.

Data obtained from NASA's operating Earth satellites is received at the Goddard Space Flight Center. Some 55 million data points are received each day, with each point containing nine bits of information. The data is recorded and stored on about 100,000 reels of magnetic tape per year.

The NASA-launched satellite that has been transmitting meaningful data for the longest period is Alouette I, a Canadian satellite orbited September 29, 1962. Alouette is returning data on free electron distribution in the ionosphere, galactic noise and cosmic rays.

The work-horse of "application" satellites is Relay I, launched December 13, 1962, and still being used to transmit voice, television, teletype and data between continents. Telstar II, launched May 7, 1963, for American Telephone and Telegraph Co.; Syncom II, July 26, 1963, Relay II, Jan. 21, 1964, and Syncom III, Aug. 19, 1964, also continue to serve as switchboards in space for communications between widely separated ground stations.

Echo I, launched Aug. 12, 1960, and Echo II, launched Jan. 25, 1964, still circle the Earth and are viewed by people around the world. However, only Echo II has a voice--its tracking beacon. The Echo satellites serve as reflectors of signals between ground stations and carry no active onboard communications receivers and transmitters as do Telstar, Relay and Syncom.

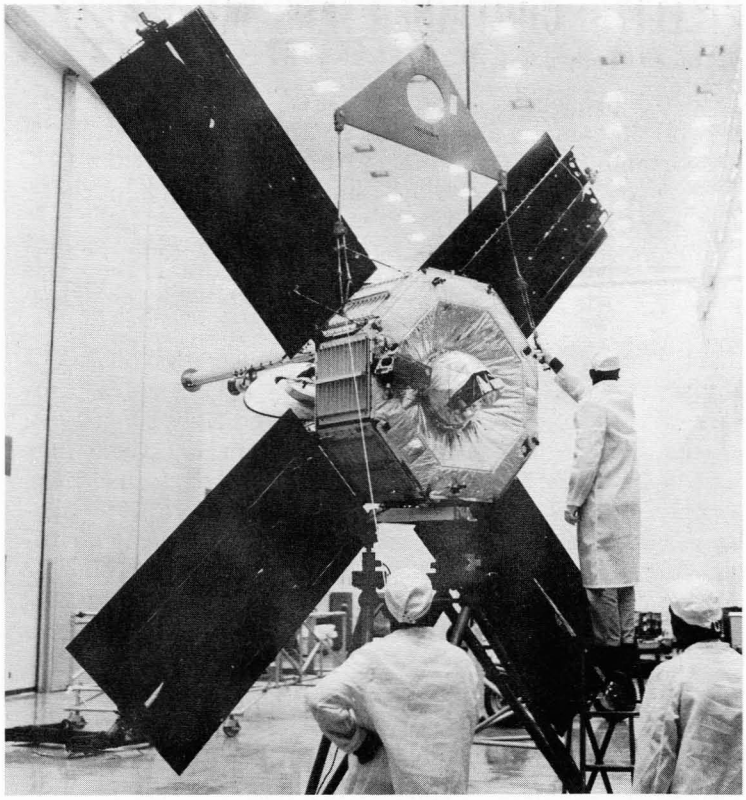
Weather satellites, TIROS VII and VIII, launched June 19 and Dec. 21, 1963, are transmitting cloud-cover pictures of the world for use in meteorology. The bigger and more complex Nimbus I transmitted day and night cloud-cover photographs for about a month after launch Aug. 28, 1964. It still occasionally can transmit signals when its solar panels provide sufficient energy.

Explorers XVIII, XX, XXI, XXII, XXIII, XXIV, XXV and XXVI, and OGO I (Orbiting Geophysical Observatory) also are busy informing scientists about space. Their information includes measurements of the Earth's magnetic fields, solar winds, effects of the Sun on Earth's environment, irregularities in the inosphere and radiation hazards in space.

The Mariner IV spacecraft, now more than 50 million miles along its 325-million-mile flight route to Mars returned 33-1/3 bits of information to Earth per second. Because of the increasing power requirements as distance from Earth increased, this rate was reduced to 8-1/3 bits per second Jan. 3. Straightline distance between Mariner and Earth is now nearly six million miles.

By the time the spacecraft passes by Mars, next July 14, Mariner is programmed to transmit 22 pictures of the red planet to Earth. Each picture will be divided into 250,000 bits of information. It will take eight hours to transmit each picture to Earth.

Many of the 31 spacecraft which were successfully launched ceased transmitting by design after their missions were completed.



Mariner IV is one of the 52 NASA spacecraft which are still travelling through space. Mariner IV began its 350-million-mile voyage to Mars on November 28. It was the start of the nation's most difficult unmanned mission to date.

Three of the 70 successfully launched spacecraft have impacted the Moon. One of these, Ranger VII, launched July 28, 1964, was successful in sending back the first close-up photographs of the lunar surface. Fifteen have "decayed," that is, they reentered the Earth's atmosphere and were destroyed by reentry heat. Six of the silent spacecraft are in solar orbit, 25 in Earth orbit.

PROFESSOR TO VISIT CENTER

Dr. Robert W. Truitt, Head, Mechanical Engineering Department, North Carolina State of the University of North Carolina at Raleigh, will be at the Center on Wednesday, January 20, to discuss new programs and policies concerning the M.S. and Ph.D. degrees in Mechanical Engineering and Aerospace Engineering.

In particular, Dr. Truitt will describe new Ph.D. program areas in aerothermochemistry, real gas effects, direct energy conversion, rarefied gas dynamics, space environmental technology and space propulsion.

Under North Carolina State University policy, it is now possible to satisfy the residence requirements for the M.S. degrees by attending one academic semester and one six-week summer term. This presumes that the student has six transferable semester credit hours from an accredited graduate school and that the M.S. thesis will be done in absentia.

Persons interested in talking with Dr. Truitt may make an appointment by calling the Training Office, 2347.

FOR SALE: House at 5 Edgewood Dr., $1000 below FHA appraisal. Elliott, LY 6-9766.

WANTED: Alternate driver from East Hampton to W.A. on 8 shift. McLaughlin, 3274.

SATELLITE CONTAINER ASSEMBLIES

(Continued from page 1)

Geodetic procedures using PAGEOS will require a network of 36 camera sites, to be equipped by relocating 12 transportable cameras selected and operated by the Department of Defense and the Department of Commerce's Coast and Geodetic Survey.

By means of triangulation, a geometric technique, two or more camera stations, about 2,500 to 2,800 miles apart, will simultaneously photograph the satellite against a star background. The photographs will yield information to locate any point on Earth, as measured from the center of mass, to within 32 feet of its true position. The distance between two surface points 2000 miles apart could be calculated with the same accuracy.

The geodetic program employing PAGEOS is expected to last five years, during which the necessary photographic measurements can be made over the entire surface of the globe.

The contractor to be selected will design, fabricate and test five canister assemblies, two of which will be used for ground test purposes. The canisters will be machined from magnesium alloy forgings and will be 26-1/2 inches in diameter inside.

Complete ground testing and handling support will be provided by the selected contractor, whose personnel will also assist in connecting the canister assembly to the launch vehicle.

The 100-foot spherical PAGEOS satellites will be procured by the Langley Center under a separate contract.

VAN ATTA, DUNLAP JOIN ERC

(Continued from page 1)

Known for such inventions as the Van Atta reflector array, he holds 18 patents and has written 39 technical papers. He received his B.S. degree at Reed College, Portland, Oregon, and his M.S. and Ph.D. degrees in physics at Washington University, St. Louis. He has been a member of the Board of Directors of the Institute of Radio engineers and a chairman of Commission of the International Scientific Radio Union. He is a fellow of the Institute of Electrical and Electronics Engineers and of the American Physical Society.

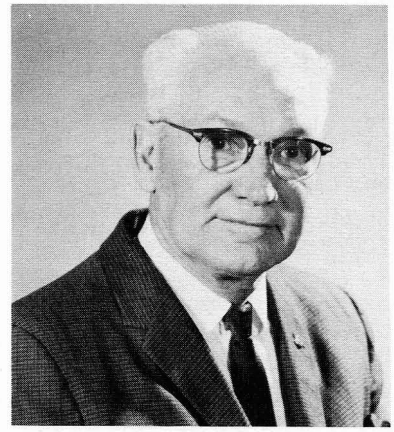
Dr. Dunlap joins NASA from the Raytheon Corporation where for six years he was director of solid state electronics research. In this position he has had full technical and administrative responsibilities for the basic and applied solid state research program. Recently he was made research director and consultant to the vice-president for engineering and research.

Dr. Dunlap also was supervisor of solid state research at the Bendix Research Laboratories, Southfield, Michigan. Before that he was associated with the General Electric Company for 11 years-- first as staff member of their research laboratories in Schenectady and later as a consultant on semi-conductors at their electronics laboratory in Syracuse.

Dr. Dunlap has published 60 scientific and technical papers and holds 20 patents, including a recently issued German patent covering all semi-conductor P-N junction devices produced by the alloying or diffusion technique and which led to a multi-million dollar licensing payment to the General Electric Company.

Dr. Dunlap was made a fellow of the Institute of Radio Engineers in 1961 and he is also a fellow of the American Physical Society. He is chairmen of the IEEE Standards Committee on Solid State Devices and was general chairman of the 1964 Northeast Electronics Research and Engineering Meeting, one of the largest annual electronics conferences in America. In his new appointment, he will continue as editor-in-chief of the journal, Solid State Electronics.

MURDEN RETIRES FROM CENTER



Benjamin F. Murden

Benjamin F. Murden, Experimental Facilities Mechanics Supervisor in the Research Facilities Services Section E, Mechanical Services Division, retired from the Center on December 30 after serving almost 36 years with the Government.

Murden was born April 26, 1897 in Newport News. He served his apprenticeship as a Machinist at the Newport News Shipbuilding and Dry Dock Company.

Before starting his career with NASA he worked at the Norfolk Navy Yard in Portsmouth. He joined the Center staff on August 19, 1930 as a Machinist.

NASA BASKETBALL LEAGUE

The NASA Basketball League opened its season of play Monday night with four games scheduled.

Boozers defeated Misfits 44-19. Adair was top scorer for the winners with 14 points and Campbell led Misfits with 7 points.

Bucket Brigade defeated Packers 42-28. McDougal led the winners with 12 points and Bush and Anspach both scored 12 points for the Packers.

Gunners barely nosed out 8-foot by a score of 54-50. Russell paced the winners with 14 points and Decker scored 19 for the losers.

X-Raiders won over Hot Rocks 32-18. Ramsey scored 8 points for the winners and Newman chalked up 9 points for the losers.

NOTICE: The following items are now available for issue from the General Stockroom, Building 1195: 7530-F19-1121 NASA Form 682 "Vugraph Frames," 7510-R19-0079 Ribbon, typewriter, carbon paper, black, 5/16 x 4 inches, 1-1/2-inch core - for Remington electric typewriters prior to 1961.

FOR SALE: 1957 Bel Air Chevrolet, 2-door, V-8 automatic transmission - $695. Smith, 2905 W. Mercury Blvd., after 5 p.m.

FOR SALE: 1953 Chevrolet. Brubaker, 722-4755.

FOR SALE: Winterization kit for Willys Jeep, Model CJ-5, includes top, side curtains and doors with all mounting hardware, Part No. Y-689340; also pair 50 power binoculars, type and size found on Destroyer vessel. Breen, PA 3-8929 after 5 p.m.

KNOW YOUR CREDIT UNION

To identify its members so that each may take pride in his membership and that of his co-workers, the Langley Federal Credit Union is sponsoring two "Fly the Flag" contests: one for NASA employees and one for Air Force civilian and military personnel.

The "flag" is a 3 x 6-inch decal identifying an individual as a member of the Credit Union. A NASA members wins if his account number is selected at random and he, in fact, is "flying the flag" or is responsible for its being flown. If he owns an automobile, the decal must be mounted on the left side of the rear bumper. If he does not, he can still win if he certifies that he has been instrumental in having a decal mounted on a specific member's car and the decal is in place. In this case both the car-owner and the sponsoring member are equally eligible - either one can win.

An account number will be selected every two weeks and reported in Langley Researcher. If that of a qualifying member, he will receive a minimum of $20. Prizes not won in any two week period will be added to the prize for the following period. Contests end when each participating group has won $100.

Members may pick up decals at the main Credit Union Office (West Area, Building 1227) or write/phone and request one.

NEW CHAPTER MEETS JAN. 28

A meeting of the newly formed Chapter of the Steering Committee of the Institute of Environmental Sciences will be held on January 28 at 7 p.m. at the Virginian Restaurant on Mercury Boulevard.

Harry Rich, Naval Research Laboratory, Washington, D.C., will speak on "Shock Testing a Naval Destroyer."

Persons interested in becoming members of the organization are requested to call George Meidinger, CH 4-2452.

SPECIAL NOTICE

To control personnel traffic and improve overall safety in the Hypersonic Physics Test Area an inter-area fencing and badge exchange system has been instituted. Any person having a need to gain access to any of the rocket facilities may do so by stopping at the Guard House at the entrance to the Hypersonic Test Area and exchanging his his NASA badge for an inter-area badge.

Persons going to facilities other than the rocket facilities do not have to stop at the Guard House.

FOR SALE: Aqua and white floor length formal. Olivero, 851-3675.

FOR SALE: 30-inch Kenmore gas range - $75, Kenmore portable dishwasher - $65. Brunner, 110 Linda Ave.

FOR SALE: Westinghouse 21-inch console TV. Lyles, 877-1372 after 5 p.m.

FOR SALE: 1954 Ford V-8. Wilson, LY 6-1344.

FOR SALE: 24-inch astronomical and terrestrial telescope. Pellett, 826-0316 after 7 p.m.

FOR SALE: 1957 Chevrolet - $300. Clark, 723-4331.

FOR SALE: 1956 Oldsmobile - $300. Fulgham, 887-5504.

FOR RENT: Rooms for gentlemen. Rollins, 868-5961.

FOR SALE: 1956 Plymouth - $200. Malone, 851-2758.

FOR SALE: 1964 Valiant, 4-speed convertible, assume payments. Watson, 214 Wythe Creek Rd., Lot 4, Poquoson.

ROCKETS IN INDIA - A sounding rocket range, developed with NASA cooperation, was opened in 1964 at Thumba, India, for international use. Sounding rocket experiments probe areas too low for satellites and too high for weather balloons.

MANY NATIONS SHARE IN SPACE EFFORT

Space research had a distinct international flavor in 1964. NASA conducted research with dozens of nations around the globe, ranging from the Soviet Union to remote spots in India and Africa.

Here are the highlights:

In March, Ariel II, the second cooperative U.S.-Britain scientific satellite, was launched by NASA.

The first series of NASA-Soviet test utilizing the passive communication satellite Echo II was held between Feb. 21 and March 9.

The first launching of NASA instrumentation on a foreign vehicle in cooperative experiment took place in Algeria in April under the auspices of the French National Center for Space Studies.

Canada undertook to prepare in the next five years four ionospheric satellites to be launched by NASA.

The sounding rocket range at Thumba in India, developed with NASA cooperation, became the first range open to all qualified nations.

NASA's Polar Ionospheric Beacon Satellite (S-66), launched in October, had ground-support from scientists in 29 countries plus stations in Antarctica, Greenland and Hong Kong.

Syncom III, positioned over the equator, relayed high-quality television pictures from the Tokyo Olympic Games.

NASA and the European Space Research Organization (ESRO) signed a memorandum of understanding July 8 to build two scientific satellites.

An agreement was concluded with Spain in October for the establishment and operation of a tracking station west of Madrid.

The first scientific sounding rockets in South America were launched in December. Argentine experiments to investigate the ionosphere were launched on two rockets supplied by NASA.

FOR SALE: 1961 Mercury Comet. Nelson, 826-5118.

FOR SALE: 1962 Volkswagon, Rigo, 877-2241.

NASA REALIGNS SPACE FLIGHT UNITS

Elements of NASA's manned space flight operations will be aligned to meet the requirements imposed by concurrent Gemini and Apollo launch schedules.

Dr. George E. Mueller, Associate Administrator for Manned Space Flight, said the key organizational changes which were effective January 1 are:

1. Creation of a new position, Mission Operations Director, Office of Manned Space Flight (NASA Headquarters), to which E. E. Christensen has been appointed. This position replaces the position of Deputy Associate Administrator for Manned Space Flight Operations, which has been vacant since Walter C. Williams resigned April 24 to join the Aerospace Corporation.

2. Creation of two Mission Director positions. The Mission Directors, reporting to the Mission Operations Director, will work from Washington and will have overall responsibility for the mission to which they are assigned.

3. Creation of an Operations Support Requirements Office (OSRO) in the Office of Mission Operations. Program requirements for support of manned space flight operations will be reviewed, coordinated, and transmitted through this office to other NASA offices and centers, and to the Department of Defense and other government agencies. Porter Brown, head of the Manned Spacecraft Center's Operations Support, Plans and Programs Office at the Kennedy Space Center, has been appointed director of OSRO. The Operations Support Requirements Office will provide a single channel and point of contact for support requirements submissions; however, the details which must be worked out within the agency and the Department of Defense on a day-to-day basis during implementation of support of manned launches will continue to be handled at the operating levels.

4. Transfer of the Manned Spacecraft Center's Florida Operations to the Kennedy Space Center and establishment of the position of Director, Launch Operations. The transfer of the MSC group will place the responsibility for assembly, checkout and launch of the total Apollo space vehicle with a single organization. Dr. Kurt H. Debus is the Director of Kennedy Space Center and Albert F. Siepert is the Center Deputy Director. Under the revised organization, Dr. Debus will also act as the Director, Launch Operations, and G. Merritt Preston, who has supervised the MSC Florida Operation, will become the Deputy Director, Launch Operations. Within the Launch Operations Area, three operating elements will be headed by Assistant Directors: Launch Operations by Dr. Hans F. Gruene; Spacecraft Operations by John J. Williams, and Information Systems by Karl Sendler.

In addition, the new positions of Director, Plans, Programs and Resources and Assistant Director for Support Operations filled by Lt. Col. Rocco A. Petrone and Lt. Col. Raymond L. Clark, respectively, relate to the former positions of Assistant Director for Program Management and Assistant Director for Technical Support Operations. The post of Assistant Director for Administration was filled by George E. Van Staden, effective January 4. As a final realignment the Launch Support Equipment Engineering Division and the Facilities Engineering and Construction Division will report to the new position of Assistant Director for Engineering and Development. Col. Aldo H. Bagnulo will act in this position in addition to his heading the Facilities Engineering and Construction Division.

"The realignment provides for the efficient carrying of launches in the upcoming manned space flight missio Dr. Mueller said. "Organizational responsibilities and lationships between the NASA Centers and offices direct managing and supporting the manned flight effort are si lified and strengthened."

NASA BOWLING LEAGUES

Mexicali Restaurant and Unitary are tied for first pl in Group A of the NASA Tenpin League with 42 wins and losses each. Top bowlers for the week were Ernie Ang with a 232 game and Henry Lee with a 612 set.

Odd Balls lead in Group B with 44 wins and 20 loss Top scores were rolled by Larry Edwards with a 258 ga and Wayne Barfoot with a 631 set.

Analogs are in first place in Group C with 44 wins and losses. Tied for second are Question Marks and Barrist with 43 wins and 21 losses each.

GROUP A

Mexicali	42	22	Alley Cats	32	3
Unitary	42	22	Short Circuits	31	3
Phantoms	41	23	Devious	28	3
Flyers	36	28	Payloads	23	4
Frame Ups	34	30	Hornets	22	4
Electronic Shop	32	32	Raiders	21	4

GROUP B

Team	W	L
Odd Balls	44	20
Misfits	37	27
Ranch House	36	28
Beats Me	36	28
Cee Pees	35.5	28.5
A-OK's	35	29
Ivy Farms	35	29
Ten Benders	32	32
Pin Wigglers	29	35
HMS	28.5	35.5
Flight Engineers	28	36
Galaxies	28	36
Malfunctions	25	39
Spare Oops	17	14

GROUP C

Team	W	
Analogs	44	2
Question Marks	43	2
Barristers	43	2
ACD	37.5	2
Dillys	35	2
Strike Outs	34	3
Alley Oops	34	3
Greenhorns	32	3
Dopesticks	30.5	3
Spare Parts	29	3
Gliders	24	4
Bowling Belles	22	4
Mets	22	4
Lunar Tics	18	4

Light Machine Shop No. 1 leads the NASA Duckpin L gue with 48 wins and 20 losses. Ten Spots are in sec place with 36 wins and 32 losses. Top scores for the w were rolled by Jim McCann with a 136 game, John Dup with a 366 set and Mary Carmines with a 127 game 336 set.

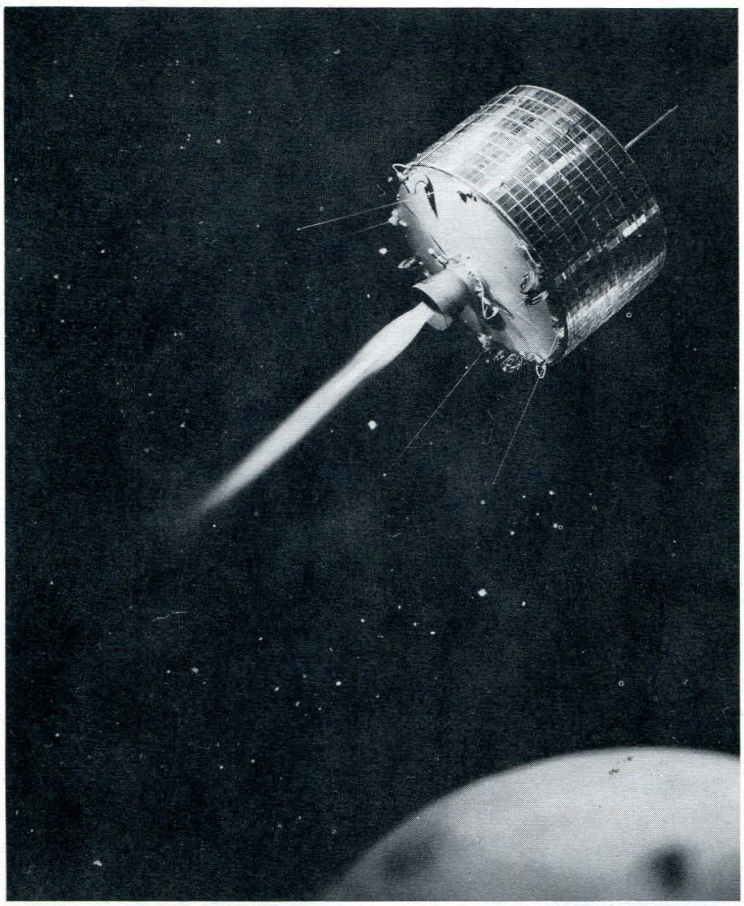
Lt. Mach. 1	48	20	Rebel Bombers	32
Ten Spots	36	32	Lt. Mach. 2	30
Tigers	35	33	Strike Outs	23

FOR SALE: 3-bedroom brick rancher with attached gar and fenced yard. Located in Brentwood. Assume G.I. l Bohon, LY 6-7937.

FOR SALE: 14-1/2-foot boat with 25 hp Evinrude mo trailer and other accessories. Ezzell, CH 5-6849.

FOR RENT: 3-bedroom house in Ivy Farms - $150 month. Hecker, 596-1191.

FOR SALE: 40-inch Frigidaire electric range - $60, gun, .22 MAG-20 GA. MAG., over and under, savag MDL - $45. Hypes, 826-5328.



Operation of the Syncom II and Syncom III communications satellites are being transferred by NASA to the Department of Defense. Syncom III (above), was launched on August 19 and is in a "synchronous orbit with the Earth."

GENERAL JONES JOINS NASA

Brig. Gen. David M. Jones has been appointed a Deputy Associate Administrator for Manned Space Flight.

Gen. Jones will be primarily concerned with major development problems in the Gemini and Apollo programs, the planning for Advanced Missions and all Mission Operations. He will work with other NASA program offices to insure optimum use of other elements of NASA to accomlish program objectives.

Born in Marshfield, Oregon, Gen. Jones attended Tucson High School in Arizona and the University of Arizona. He entered pilot training in 1937 and has had continuous military service since his graduation from flight training in 1938.

Early in 1942, he volunteered for the Doolittle Project and flew the initial evaluation flights on the two-engine bomber aircraft which were specially equipped for take-off from a Navy aircraft carrier on a mission to bomb Tokyo. Following the raid on Tokyo, Gen. Jones bailed out over China and was assisted in his return to the U.S. by the Chinese people.

In September 1942, Gen. Jones was assigned as Group Commander of the 319th Bomb Group in North Africa to develop low level bombing tactics and techniques. On his fifth mission he was shot down over Bizerte and spent two and a half years as a prisoner of war.

Gen. Jones has attended three major Armed Forces schools: Command and General Staff School, Armed Forces Staff College and the National War College.

His experience as Deputy Chief of Staff, Operations, of the Air Proving Ground resulted in his being appointed as Director of the B-58 Test Force when it was organized in 1958. In 1960 he was named Vice-Commander of the Wright Air Development Division and in 1961 Vice-Commander of the Aeronautical Systems Division at Wright-Patterson Air Force Base, Ohio.

Gen. Jones' most recent assignment has been as Deputy Chief of Staff, Systems, Air Force Systems Command, Andrews Air Force Base.

NASA TO TRANSFER SYNCOM

NASA began transferring operation of the Syncom II and Syncom III communications satellites to the Department of Defense on Jan. 1.

NASA has completed its experimental research and development program with the two synchronous satellites. The DOD will operate the satellites for the remainder of their useful lives.

The transfer will be completed by March 31.

Telemetry and command stations and range and range-rate equipment operated by NASA for its Syncom program will be transferred to DOD along with the satellites. The DOD, however, will provide NASA with certain telemetry data of continuing scientific and engineering interest.

The DOD has furnished the communications ground stations used to relay transmissions via the two Syncoms for the past two years.

Syncom II was launched July 26, 1963 and Syncom III on Aug. 19, 1964, both from Cape Kennedy. Both are operating at altitudes of about 22,300 miles.

The satellites are referred to as synchronous because their orbital periods around the Earth are equal to the time it takes for the Earth to complete one rotation on its axis.

Syncom II provided the first public demonstration of international communications via a synchronous satellite Aug. 4, 1963 when U.S. and Nigerian newsmen used it to transmit teletyped news and photographs. On Aug. 23, 1963, Syncom II relayed its first live telephone conversation between President Kennedy in the White House and the Nigerian Prime Minister Sir Abubaker Tafawa Balewa in Nigeria.

The first trans-Pacific live telecasts were made via Syncom III in October 1964 when events of the Olympic Games in Japan were transmitted.

The transfer of control was arranged in an exchange of letters between Dr. Robert C. Seaman Jr., NASA Associate Administrator, and Dr. Eugene D. Fubini, Assistant Secretary of Defense and Deputy Director, Defense Research and Engineering.

FOR SALE: 1963 Volkswagon - $1250. Collins, 595-1201.

WANTED: Alternate drivers from Norfolk to W.A. on 7:30 shift. Hudgins, 4851 or Norfolk 587-9023.

FOR SALE: 1953 Chevrolet - $125. Alfaro, 877-3381.

FOR SALE: 1959 G.E. 17-inch portable TV - $20. Harrison, 826-4344.

FOR SALE: 1959 4-door Ford Country sedan station wagon, best offer over $495. Kyle, 838-0041.

WANTED: Ride from Tide Mill Farms area to W.A. on 7:30 shift. Mary Edwards, 3234.

FOR SALE: 6-month old German Shepherd dog. Ross, LY-69562.

DR. EUGENE M. EMME ATPH

Langley Researcher

JANUARY 29, 1965 LANGLEY RESEARCH CENTER VOLUME 4, NUMBER 2

AMOLE HEADS JOINT DRIVE

A. Bruce Amole, Activities Coordinator, Personnel Division, has been appointed chairman of the joint fund raising campaign for the National Health Agencies and the Federal Service Joint Crusade.

A. Bruce Amole

The campaign will be conducted at the Center from February 1 through March 15. A kick-off meeting of attendance clerks and other campaign workers will be held today at 1:30 p.m. in the TAC Auditorium.

Included in the campaign will be ten health agencies and four crusade agencies.

The health agencies include Muscular Dystrophy Associations of America (March Against Time), National Association for Mental Health, National Multiple Sclerosis Society, National Society for Crippled Children and Adults (Easter Seals), National Cystic Fibrosis Research Foundation, National Foundation - March of Dimes, National Society for the Prevention of Blindness, United Cerebral Palsy Associations, American Cancer Society, and American Heart Association (Heart Fund).

The crusade agencies include American Korean Foundation, CARE, Radio Free Europe, and Project Hope.

The campaign is conducted annually in compliance with and Executive Order establishing rules and regulations on Federal fund-raising.

All donations to both efforts should be turned in to attendance clerks who will send them to division monitors.

The division monitors are as follows:

Office of Engineering and Technical Service and Headquarters Building - Eleanor Cole, Flight Reentry Programs Office - Joan Hixon, Scout - Diane Harris, MORL - Gloria Alto, LOPO - Anna Plott, Aero-Physics - Mary Catlett, Analysis and Computation - Joann Woodcock, Applied Materials and Physics - Agnes Dunkley, Dynamic Loads - Nancy Holt, Flight Mechanics and Technology - Rosemary Neubaum, Mechanical Service and Plant Maintenance - Louise Griggs.

Office of Assistant Director for Administration - Barbara Hogge, Administrative Services - Carolyn Wilt, Fiscal - Elsie Olive, Personnel - Joyce Anthony, Photographic - Sandra Bowles, Procurement - Betty Shelton, Full-Scale Research - Doris Vandeveer, IRD - Brenda Spencer, Research Reports - Margaret Schoonover, Space Mechanics - Myrtle Wells, Structures Research - Frances Arnn, Electrical Systems, Flight Vehicles and Systems, and Research

(Continued on page 7)

HIXON NAMED FEDERAL CIVIL SERVICE EMPLOYEE OF THE YEAR

S. Walter Hixon, Head of Training Branch, Personnel Division, has been named Federal Civil Service Employee of the Year for the numerous Tidewater area installations.

Hixon was chosen by a joint committee of the Chambers of Commerce, including the Peninsula group and the Federal Personnel Council of the Hampton Roads area.

A Federal employee with more than 27 years of service, Hixon is Supervisory Officer for Employee Development and Head of Educational Programs and Services. He is responsible for direction and coordination of Langley's training and educational programs.

Selection of nominees is based upon their job performance, job related activities, self-development and community service. The program, which has been sponsored in the area for the past six years, serves to inform the public of the missions and quality of service being rendered by the 25-30 governmental agencies and departments.

Other Civil Service personnel nominated for the employee of the year award were: Elbert R. Booker, management technician of the Army Transportation Center at Fort Eustis; Cecil S. Hudgens, research supply officer of the Air Force Systems Command at Langley Air Force Base; Clifford M. Nix, supervisory industrial engineering technician of Juliens Creek Naval Ammunition Depot; Charles E. Brewer Jr., electronic maintenance supervisor at the

(Continued on page 7)

S. Walter Hixon (center), Head of Training Branch, Personnel Division, receives the Civil Service Employee of the Year Award for the Hampton Roads Area from Anne Kilgore, Mayor of Hampton. Looking on is Stephen P. Ryder, Director, Philadelphia Region, U.S. Civil Service Commission. The award was presented at ceremonies held at the Monticello Hotel in Norfolk. Ryder was guest speaker.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Room 217, Building 587, telephone 2375.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGEMENT. . .Making plans to join the ranks of newly weds is Sue Houser, Personnel Division. She is engaged to Capt. Alan R. Kidd Jr., U.S. Air Force, and plans call for an April 3 wedding.

REPRESENTATIVE TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on February 9 from 3 p.m. until 4 p.m. Employees having problems or questions concerning the plan may call Lois Harris, 2323, for an appointment.

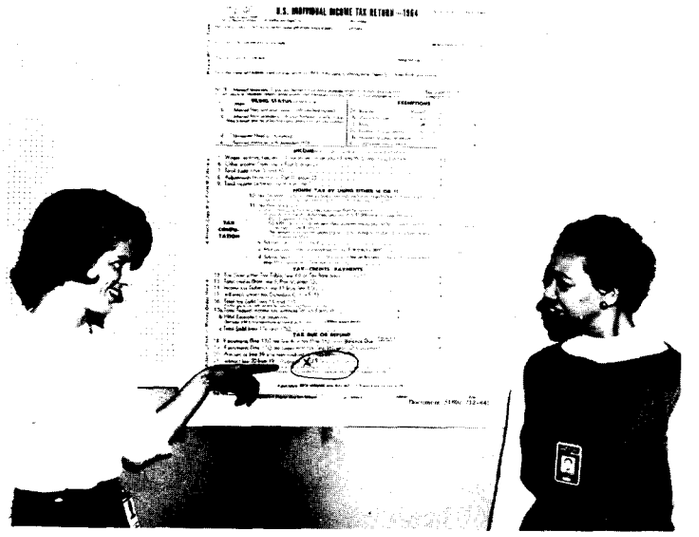
WEDDING BELLS. . .Ruth Martin, Fiscal Division, took her vows with Paul Riley, U.S. Air Force, on January 16 at the Langley Base Chapel.

ASTRONOMY CLUB. . .The Astronomy Club will meet on February 12 at 7:30 p.m. in the Activities Building. The purpose of the meeting will be to discuss the installation of a club telescope.

NEW ARRIVALS. . .Weighing in at six pounds on January 10 was Katherine Anne, daughter of John B. Hall, Lunar Orbiter Project Office. . .Announcing the birth of a daughter, Michelle Wynette, on January 2 is R. Wayne Guy, Aero-Physics Division. . .Announcing the birth of a nine pound, six ounce daughter, Wanda Denise, on January 21 is Mickey Gardner, Structures Research.

A GOOD LITTLE BOOK. . .The following comment concerning a book written by Dr. Samuel Katzoff, Assistant Chief of Applied Materials and Physics Division, appeared in a recent issue of the Society of Technical Writers and Publishers Review: "With the exception of Strunk and White's Elements of Style, the best little book I've read on writing is 'Clarity in Technical Reporting' by S. Katzoff of NASA's Langley Research Center. Never intended as a publication on technical writing, this 25-page book grew out of Dr. Katzoff's suggestions to inexperienced authors at the Langley Center."

ICARIAN FLYING CLUB. . .The ICARIAN Flying Club's Annual Banquet will be held on February 6 at Eli's Restaurant. A social hour will be held at 6:30 p.m. followed by dinner and a speech by Frank Kingston, noted pilot-author and humorist. The club is composed of local airplane owners, pilots and enthusiasts with headquarters at Patrick Henry Airport. The club holds monthly meetings and "fly-ins" to numerous points of interest. The annual banquet is open to anyone in the Tidewater area interested in aviation. Tickets for the banquet may be obtained from Carl Sandahl, LY 6-2392.



If you're lucky enough to get an income tax refund this year, why not take it in U.S. Savings Bonds? This way, your money will go wo work earning for you. Joyce Price (left), Employment Branch, and Mary Gardner, East Area Receptionist, show you the space to check on your 1964 Federal income tax return requesting your refund in Savings Bonds. The rest is automatic. Put your refund to work for you.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of February 1:

Monday - Beef broth with barley, roast beef, grilled pork chops, spaghetti with meat sauce, spiced luncheon meat.

Tuesday - Chicken-rice soup, half-pound chopped steak, simmered corned brisket of beef, fried chicken, barbecued sandwich.

Wednesday - Vegetable-beef soup, Spanish pot roast, baked Virginia ham, stuffed pepper, Irish omelette.

Thursday - Puree of bean soup, grilled T-bone steak, chicken shortcake, smoked pork sausage, Austrian ravioli.

Friday - Clam chowder, seafood plate, braised short ribs of beef, broiled fillet of perch, tamale pie.

The menu for the week of February 8 is as follows:

Monday - Tomato-barley soup, hot roast beef sandwich, yellow rice and chicken, grilled pork steak, fish cakes.

Tuesday - Split green pea soup, sliced turkey with dressing and cranberry sauce, baked ham, liver and onions, baked hash.

Wednesday - Chicken-vegetable soup, roast ribs of beef, barbecued spareribs, fried chicken, macaroni and wieners.

Thursday - Cream of tomato soup, grilled steak, veal stew, shrimp gumbo, western omelette.

Friday - Clam chowder, half-dozen fried oysters, Swiss steak, broiled fish, cheeseburger.

FOR SALE OR RENT: 10 x 50-foot 1963 Pacemaker, 2 bedrooms and washing machine. Newman, 722-2062.

FOR RENT: 4-room apartment at 315 Chesapeake Blvd. - $115 per month. Watson, CH 4-1668.

SIX EMPLOYEES PRESENT PAPERS AT AIAA MEETING

Six papers by ten Center scientists were presented at the Aerospace Sciences Meeting and Honors Convocation of the American Institute of Aeronautics and Astronautics. The meeting was held January 25-27 at the New York Hilton Hotel in New York.

"Review of NASA High-Altitude Clear-Air Turbulence Sampling Programs" was presented by Roy Steiner, Dynamic Loads Division, at the session on Atmospheric Environment.

"Application of the Method of Integral Relations to Real-Gas Flows Past Pointed Bodies" by Perry A. Newman and Jerry C. South, both of Dynamic Loads Division, was presented by Newman at the session on Fluid Dynamics 11.

At the session on Structural Mechanics 1 a paper entitled "Buckling of Segments of Toroidal Shells" by Dr. Manuel Stein and John A. McElman, both of Structures Research Division, was delivered by Dr. Stein.

"The Aeroelastic Instability of a Simply Supported Panel Subjected to a Nonlinear Temperature Distribution and Supersonic Flow" by Harry G. Schaeffer and Walter L. Heard Jr., both of Structures Research Division, was presented by Schaeffer at the Structural Mechanics 11 session.

At the session on Fluid Dynamics V a paper entitled "An Improved Technique for Obtaining Quantitative Aerodynamic Heat-Transfer Data with Surface Coating Materials" by Robert A. Jones and James L. Hunt, both of Aero-Physics Division, was delivered by Jones.

John N. Rossettos, Structures Research Division, gave a paper on "Toroidal Shells under Internal Pressure in the Transition Range" at the Structural Mechanics 11 session. J. L. Sanders Jr., Professor, Structural Mechanics, Harvard University, was co-author of the paper. Richard Heldenfels, Chief of Structures Research Division, served as chairman for the session.

OPEN SEASON STARTS FEB. 1

All employees enrolled in plans under the Federal Employee Health Benefits Program are reminded that they will have an opportunity to change their enrollments during the open season scheduled for February 1-15. Eligible employees who are not enrolled will be able to enroll during this open season.

Enrolled employees will be able to make the following changes in their enrollments: from one plan to another, from one option to another in the same or a different plan, from self only to self and family, or the reverse.

An employee who does not wish to change his registration need take no action; his present registration will remain in effect. An employee who is not now enrolled and wishes to enroll, or who is enrolled and wishes to change his enrollment, must complete a new Standard Form 2809. The completed form must be received in the Employee Services Branch Office, Mail Stop 305, no later than February 15. Standard Form 2809 is also available from this office.

FOR SALE: Complete Monaural Hi-fi set - $75. Saunders, 825-1123.

WANTED: Gentleman to share 2-bedroom apartment. Couch, 4731.

Three employees recently shared a $600 cash award for a suggestion that might result in the granting of a patent. Mark Nichols (right), Chief of Full-Scale Research Division, presents the award to William D. Beasley (left) and Joseph D. Brooks for their suggestion entitled "Continuously Operating Induction Plasma Accelerator." Absent when the picture was taken was Raymond L. Barger.

CLASSIFICATION GROUP MEETS

The Hampton Roads Classification Association met on January 13 at the Langley Officers' Club for its first meeting of 1965.

The association, comprised of professional personnel in position classification in the federal government and private industry, was organized to provide for the professional exchange of classification information, ideas and experience of the members and to develop and promote improvements and advancements in position classification.

William Marks, Deputy Chief of Classification for the Department of the Army, was guest speaker. He discussed some of the problems encountered by the Department of the Army in salary and wage administration and their solutions.

The program also included the installation of the following officers for 1965: President, William L. Williams, Head of Classification at Langley Research Center; Vice-President, Les H. Gray, Bureau of Naval Weapons, Fleet Readiness Representative (Atlantic), Naval Air Station, Norfolk; Secretary, Leonard B. McNeil, Classification Branch at Langley Center, and Treasurer, B. Lee Lewis, Corps of Engineers, Norfolk.

CALCULUS COURSE OFFERED

The University of Virginia Extension is offering a 4-semester-hour course in Calculus II. The class will meet on Saturday, February 6 at 9 a.m. in Building 1348.

For further information call Kenneth Margolis, 2359.

WANTED: Ride from Whealton Rd. to W.A. on 8 shift. Ashe, 4753.

WANTED: Driving combination from Dresden Dr. to W.A. on 7:30 shift. Goldberg, 4571.

FOR SALE: 1963 Dodge Polora 500, 383 engine, automatic transmission. Coates, 596-4278.

ACTIVITIES ASSOCIATION'S CALENDAR OF EVENTS

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
JANUARY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 Department Meeting	2 Bridge Club Model Club	3 Basketball 5 - 9 p.m.	4 Stock Section Dinner Party	5 Light Machine Party	6 Analog B Branch Party
7	8 Basketball 5 - 9 p.m.	9 Bridge Club	10 Basketball 5 - 9 p.m.	11 Payday Game Night $400 Jackpot	12 TTRS Party LINCOLN'S BIRTHDAY	13 Valentine Dance 9 p.m. - 1
14 SAINT VALENTINE'S DAY	15 Basketball 5 - 9 p.m.	16 Bridge Club	17 Bloodmobile 9 a.m.	18 Supervisors Club Party	19 Data Processing Party	20
21	22 HOLIDAY WASHINGTON'S BIRTHDAY	23 Bridge Club	24 Basketball 5 - 9 p.m.	25 Payday Game Night $400 Jackpot	26	27
28				MARCH 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31		

1965 FEBRUARY 1965

NASA EXTENDS JPL CONTRACT

NASA has extended for two more years its contract with the California Institute of Technology for research and development programs conducted at the government-owned Jet Propulsion Laboratory in Pasadena, California.

The contract which was due to expire December 31 will now run to December 31, 1966.

Work to be performed under the contract includes research and development in lunar and interplanetary programs, aeronautics, development and operation of deep space tracking facilities, providing NASA with technical advice, scientific studies and reports of investigations, and providing supervision of related work given to contractors.

Requirements from NASA will be issued in the form of written Task Orders, and the cost of this contract will be determined by the sum of these task orders. In addition, the two parties will negotiate each fiscal year for a fixed fee for the management of the Jet Propulsion Laboratory.

ADULT EDUCATION CLASSES

Adult Education classes, conducted by Hampton High School, will be held on Monday and Thursday nights as soon as 15 students have enrolled in a course.

Subjects offered include languages, woodworking, sewing, typing, and Americanization. A lecture series on World Events is scheduled to meet one night per week.

Enrollment will be held at Hampton High School on Monday and Thursday nights. For further information call 838-0707 on class nights.

CLUB OF THE MONTH

"Check, check, double check" are familiar words to members of the Peninsula Chess Club. The club, which is open to membership to novices as well as "old pros" meets Tuesday evenings at 7:30 in the South Morrison School cafeteria, Newport News.

Officers of the club include: President, W. S. Gilman, Procurement Division; Secretary, H. A. Smith, Flight Reentry Programs Office, and Tournament Director, Larry Hoffman, Applied Materials and Physics Division.

The club sponsors many events such as the Peninsula Championship, the Peninsula Section of the Tidewater Championship, and numerous small tournaments including speed tournaments.

A high school team tournament has been held for the past four years and this year the club introduced a new program which it hopes will become an annual event - a high school tournament open to any member of either a junior or a senior high school on the Peninsula. The tournament is tentatively scheduled to start Saturday, February 20. Announcements will be sent to the various schools.

Currently in progress is the Peninsula elimination section of the Tidewater Championship which started Tuesday.

For information concerning club activities call W. S. Gilman, PA 3-3142, or H. A. Smith, LY 6-6679.

WANTED: Ride to New York City or Connecticut any weekend before February 27. Meyers, 2338.

FOR SALE: Cornet - $70. Henley, PA 3-9767.

NASA BOWLING LEAGUE

The NASA Tenpin League, including Divisions A, B, and C, will hold a handicap tournament on March 9 and 16 during the regular bowling time. Team captains will be notified of complete details.

Mexicali Restaurant continues to lead Group A in the NASA Bowling League with 48 wins and 24 losses. Top bowlers for the week were Buddy Grist with a 226 game and Jack Paulson with a 618 set.

Odd Balls are in first place in Group B with 51.5 wins and 20.5 losses. High scorers were Irvin Weinstein with a 251 game and Bill Drummond with a 659 set.

Barristers lead Group C with 50 wins and 22 losses. Taking high scoring laurels were Joe Drozdowski with a 247 game, Gary Beasley and Frank O'Neil with 626 sets, and Nancy Taylor with a 254 game and 634 set.

GROUP A

Mexicali	48	24	Electronic Shop	35	37
Phantoms	45	27	Short Circuits	32	40
Unitary	43	29	Devious	31	41
Flyers	43	29	Payloads	28	44
Frame Ups	38	34	Raiders	27	45
Alley Cats	37	35	Hornets	25	47

GROUP B			GROUP C		
Odd Balls	51.5	20.5	Barristers	50	50
Misfits	41.5	30.5	Analogs	47	25
Ranch House	41	31	Question Marks	46	26
Cee Pees	39.5	32.5	ACD	40.5	31.5
Ivy Farms Shell	39	33	Dillys	39	33
Beats Me	39	33	Strike Outs	38	34
A-OK's	38	34	Greenhorns	37	35
Ten Benders	37.5	34.5	Alley Oops	37	35
Galaxies	35	37	Spare Parts	34	38
Pinwigglers	33	39	Dopesticks	33.5	38.5
Flight Engineers	31	41	Bowling Belles	28	44
HMS	29	43	Gliders	27	45
Malfunctions	25	47	Mets	25	47
Spare Oops	22	50	Lunar Tics	22	50

Light Machine Shop No. 1 leads the NASA Duckpin League with 42 wins and 24 losses. Ten Spots and Tigers are tied for second with 40 wins and 36 losses each. Top scores were rolled by A. R. Heath with a 145 game, John Dupere with a 363 set and May Lou Wood with a 116 game and 326 set.

Lt. Mach. 1	52	24	Rebel Bombers	38	38
Ten Spots	40	36	Lt. Mach. 2	35	41
Tigers	40	36	Strike Outs	23	53

SPECIAL LECTURE PLANNED

A special lecture on a report entitled "Measurements with a Modulated Bayard Alpert Gage in Alumino Silicate Glass at Pressures Below 10^{-12} Torr," will be presented in the IRD conference room on February 8. The lecturer will be Dr. J. P. Hobson, National Research Council, Ottawa, Canada. Persons interested in attending should contact George M. Wood, 3483, or Leonard Melfi, 3234.

WANTED: Ride to Williamsburg on Saturday morning, February 6. Karen Rackley, PA 3-8933.

WANTED: Driving combination from Williamsburg to E.A. on 8 shift. Keckler, 2264.

The season's first snow storm hit the Peninsula on January 15. A combination of high winds and snow contributed to the composition of this unusual night shot taken by Bob Nye.

VALENTINE DANCE PLANNED

A Valentine Dance will be sponsored by the Activities Association on Saturday, February 13 from 9 p.m. to 1 a.m. at the Activities Building. Give the lady of your heart her favorite Valentine present by taking her out for an enjoyable evening of dancing with music furnished by Jerry Fisher, his band, and vocalist Bobby Fowler. Jerry has been billed as "The Poor Man's Pete Fountain."

Tickets may be purchased from Activities Association representatives at a cost of three dollars per couple which includes the cost of setups for the evening.

Tables may be reserved by calling Bruce Amole. 4583. No reservations will be held after 10 p.m.

CHILDREN'S PUPPET SHOW

The Activities Association is planning to sponsor a children's puppet show on Saturday, February 27 at the Activities Building.

Featured on the program will be Nancy Woodward, Norfolk, and her Porpoise Puppets.

Tickets may be purchased from District Representatives for twenty-five cents. Complete details will be announced in the next issue of Langley Researcher.

WANTED: Ride from Grove St. and Chesapeake Heights in Buckroe to W.A. on 7 shift. Loop 3385.

WANTED: Alternate drivers from Magruder School, Williamsburg to E.A. on 8 shift. Leonardy, 2340, or Mason, 2212.

COURSES OFFERED STAFF

A graduate course in MS 511 - Introduction to the Solid State, is being offered under the direction of the University of Virginia. The course, which will begin on February 9, is an introduction to the theory of the electronic structures of solids with primary emphasis on electric and magnetic properties. Subjects covered will include crystal structure, dielectric properties, free electron theory of metals and magnetism.

Prerequisite is consent of the instructor. This course is essentially the same as that listed in the Graduate Studies Announcement dated December 22 under MS (TBA) Electronic Processes in Solids except knowledge of quantum mechanics is not a prerequisite for this course.

Dr. Donald R. Ulrich will be the instructor.

Tentative plans are being made to offer a course in As.E. 502 - High Speed Aerodynamics, under the direction of the Virginia Polytechnic Institute. The course will start in March.

The course will include theoretical treatment of aerothermodynamic phenomena and shock waves, linearized subsonic and supersonic flow past planar surfaces and bodies of revolution, and theory of transonic aerodynamics including the study of mixed flow. The instructor will be Fred R. DeJarnette.

A course in Basic Engineering Metallurgy is being offered at Old Dominion College. The following topics will be discussed: (1) structure of metals (2) the solid state: freezing, solutions, diffusion (3) mechanical properties and metal failure (4) equilibrium diagrams (5) hardening of metals (6) annealing: recovery, recrystalization, and grain growth (7) phase changes in iron and steel (8) heat-treating equipment and operations (9) iron and its alloys (10) the light metals (11) methods of fabrication.

The class will meet on Tuesday and Wednesday evenings from 7 to 8:15 in the Engineering Building, Old Dominion College. The course will start on February 4 and Harvey W. Herring will be the instructor.

Employees interested in enrolling in these courses should call the Training Office, telephone 2347.

LECTURER-CONSULTANTS TO VISIT HERE

The following lecturer-consultants will visit the Center during the period of February 1 - 12:

Dr. Milton van Dyke, Department of Aeronautics and Astronautics, Stanford University, will be at the Center on February 1. His area of specialty is Theoretical Aerodynamics.

Dr. James B. Eades Jr., Head of the Department of Aerospace Engineering, Virginia Polytechnic Institute, will visit here on February 11. His area of specialty is High-Speed Aerodynamics.

Employees interested in conferring with these visitors should call the Training Office, telephone 2347, for an appointment.

FOR SALE: 1957 Oldsmobile 88 - will sell or trade. Wyatt, TW 8-2481.

WANTED: Ride or driving combination from Marlbank Farm to W.A. on 8 shift. Evans, 3241.

FOR SALE: Lot in Edgehill. Craw, 898-5584.

FOR RENT: 3-bedroom and bath furnished cottage apartment. Moore, 722-7702.

60,000 POUNDS AFLOAT - A tail section structure of the NASA's Saturn V rocket booster is shown under wraps as it moved up the Mississippi enroute to Alabama. The structure supports the booster's five F-1 engines that generate a thrust of 7.5 million pounds. Built by Boeing at NASA's Michoud Operations at New Orleans, it was shipped 1,100 miles to Marshall Space Flight Center for final assembly.

MERIT PROMOTION PLAN

In accordance with the provisions of the Langley Merit Promotion Plan, it is desired to up-date lists of eligibles for Clerk-Typists and Clerk-Stenographers for future promotional opportunities under this program.

All Stenographers at the GS-3, GS-4 and GS-5 levels, and all Typists at the GS-2, GS-3 and GS-4 levels who meet the time-in-grade requirement for promotion and are interested in being considered for promotional opportunities other than those which occur within their own division, are invited to submit their names for the promotion roster by memorandum to John J. Cox, Employment Office, Mail Stop 307. Employees who have previously applied and are still interested should also submit memorandums.

When vacancies occur, selection will be made from a list of those best qualified for the particular position.

NASA BASKETBALL LEAGUE

Boozers, XRaiders, Structures, and Greenhorns remain undefeated in the NASA Basketball League. Boozers and XRaiders have three wins each and Structures and Greenhorns have two wins each.

The results of games played recently are as follows:

Structures 44 - Short Circuits 34, Greenhorns 45 - ACD 21, Bucket Brigade 48 - 8-foot 32, Misfits 44 - Gunners 34, XRaiders 36 - ACD 25, Boozers 67 - Packers 23, Greenhorns 67 - Short Circuits 28, Structures 53 - Hot Rods 41, Misfits 25 - Bucket Brigade 20, Boozers 71 - Gunners 30, 8-foot 58 - Packers 44, XRaiders 41 - Short Circuits 33.

FOR SALE: 10-inch tricycle - $3, 16-inch tricycle - $5, 20-inch sidewalk bicycle - $10. Carmines, 826-2894.

LOST: Man's Swiss wrist watch with calendar window. Booker, 4440.

KNOW YOUR CREDIT UNION

When to trade your car is a problem. Most people do it haphazardly - when the old car is paid for or when the wife says buy a new one. Actually, today's automobile is engineered to run 100,000 miles but six years or 72,000 miles is a more realistic limit for first-line transportation. The latter figures guide the Department of Defense trade-ins. DOD also replaces its vehicles when the cost of repair exceeds 50 per cent of the vehicle's wholesale value.

Another authority says that a driver who rates reliability above economy should trade at 45,000 miles (4 years) if he owns a lower priced car or at 60,000 miles (5 years) if he owns a medium priced one.

Finally, there is a somewhat more scientific indicator--the Extensive Repair Cost formula. It works like this:

Repair only when the cost per mile of operating your present car (including the cost of the repairs) is less than the cost per mile of operating a new car during its normal life expectancy.

To find X, the cost per mile of operating your present care, use this formula:

$$X = \frac{p + r - s}{m - o}, \text{ where}$$

p = present wholesale value; r = cost of repair; s = projected wholesale value at end of life expectancy (6 years); m = life expectancy in miles (72,000); and o = miles operated to date.

To find Y, the cost per mile of operating a new car, use this formula:

$$Y = \frac{c - s}{m}, \text{ where}$$

c = cost of new car; s and m as above.

If X is less than Y, repair; if X is greater than Y, replace. Either way, your Credit Union can help.

CONTEST NOTE: Better "FLY-THE-FLAG" and get that decal on your car. Member 16987 is $20 poorer because he didn't. The prize is now $40 and well worth the small effort it takes to qualify.

HIXON PRESENTED AWARD

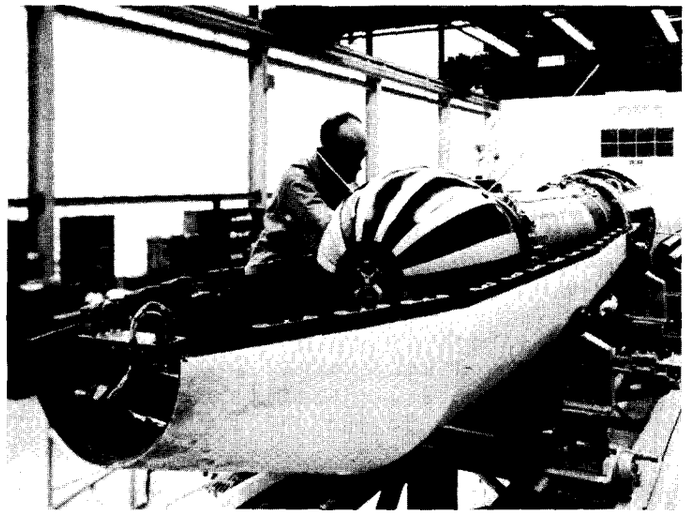
(Continued from page 1)

Norfolk Naval Air Station; James L. Cross, a naval engineer of the Fifth Coast Guard District, and Gladys A. Blair, supervisory supply clerk of Fleet Services Branch at the Norfolk Naval Supply Center.

The scope and continued effectiveness of the many training and educational programs conceived and developed at the Langley Center under Hixon's guidance have been exceptionally effective in equipping a staff with increased capability for providing the science and technology required for the success of many of the nation's aerospace programs.

Hixon was instrumental in starting Langley's first graduate study program in cooperation with University of Virginia, Virginia Polytechnic Institute and the College of William and Mary.

Hixon is a native of Midway, Alabama. He attended Troy State Teachers College and received his B.S. degree in Mathematics from Alabama Polytechnic Institute. He taught in the Alabama public school system and entered on duty at the Center on March 16, 1939.



The Italian San Marco satellite attached to its Scout launch vehicle is checked out before its launching by NASA at Wallops Island. The satellite was designed and built by Italians and launched by a NASA-trained team of Italians. San Marco made Italy the third nation ever to both build and launch its own satellite. The U.S. and USSR are the others.

AMOLE HEADS JOINT EFFORT

(Continued from page 1)

Models and Facilities - Gloria McDaniel.

In supporting the National Health Agencies, President Johnson said, "The dedicated efforts of America's National Health Agencies have contributed greatly to the progress which has been made in the fight for better health.

"The future holds promise of even greater achievement. These voluntary organizations are expanding their programs for reducing and eventually conquering many of the diseases and disabilities that afflict mankind. With each medical advance, our children and our children's children are assured of longer, healthier lives - an objective which all of us support."

Concerning the Federal Service Joint Crusade the President stated, "Throughout much of the world today, daily existence for millions of human beings is a ceaseless struggle against hunger, sickness, tyranny and ignorance - a battle which constantly requires renewed hope, faith and courage.

"Your personal support of these agencies will do much to help these agencies combat the poverty, hopelessness and fear which haunt so many of our fellow men."

NEW HANDBOOK PUBLISHED

A revised edition of "Preparing Figures for Technical Papers," a handbook for research personnel on drawing figures for reports, is now ready for distribution. This edition has been changed to meet the requirements of the new NASA report format in which figures may be inserted in the text.

Personnel who prepare report figures may obtain copies from Publications Distribution, 3337. Personnel who have copies of the previous edition of this handbook should request the revised pages for replacement.

FOR SALE: Waterfront lot in Woodhaven Shores - $1500. Fuller, 596-7548 after 5 p.m.

RIECHLMAN NAMED CONSULTANT

R. Walter Riehlman, former member of the House of Representatives from New York's 34th District (Syracuse), was sworn in recently by Administrator James E. Webb as a NASA consultant.

Riehlman, a Republican who served nine terms in Congress, will serve NASA as a consultant on a variety of policy matters. He was a member of the House Science and Astronautics Committee from 1959 to 1964 and was a member of the Government Operations Committee.

Riehlman is a native of Otisco, N.Y., and was graduated from Manlius Military Academy, Manlius, N.Y., and Central City Business School, Syracuse. He is president of the Tully Bakery Inc., Tully, N.Y., and a member of the advisory board of the Tully branch of the Marine Midland Trust Company.

ROUGH AIR FLIGHT STUDIES

NASA signed a one-year $70,000 contract with Flight Safety Foundation to report and evaluate research and development projects and events related to rough air in the atmosphere.

The non-profit Foundation will report to NASA's Aeronautical Research Division in the Office of Advanced Research and Technology. American and foreign projects concerned with the forecasting and detection of turbulence, devices for indicating rough air outside of storm areas and the effect of turbulence on airline operations will be evaluated.

The contract is part of NASA's aircraft operations research program, NASA and its predecessor agency, the National Advisory Committee for Aeronautics, have been studying rough air flying problems for several decades.

The study will be conducted from FSF offices in New York City, Phoenix, Arizona, and Los Angeles. It will be coordinated for FSF by M. G. Beard, who recently retired as assistant vice-president for safety, American Airlines.

CREDIT UNION NOTICE

The Langley Federal Credit Union held its annual meeting Monday night at the Activities Building. At the meeting it was announced that a five per cent dividend had been declared by the Board of Directors for 1964. Last year the organization also paid a five per cent dividend.

Elected to the Board of Directors were Arthur W. Carter, Robert L. Girouard, and Col. Glenn B. Riggle. The following were elected to the Credit Committee: Thelma C. Cullum, Major Richard C. Golden, Roger W. Peters, and B. Lee Schilling.

The Board elected the following officers for the year: Robert L. Girouard, president; Col. Glenn B. Riggle, first vice-president; James C. Tingle, second vice-president; Bernard T. Deem, secretary, and Cecil S. Hudgens, treasurer.

DERRING DIES AT AGE 60

Eldridge H. Derring

Eldridge H. Derring, Executive Assistant to the Associate Director and head of the Research Staff Office, died Sunday after an illness of several months.

Derring was born October 22, 1904 in Norfolk. He attended Maury High School in Norfolk and graduated from Poquoson High School. He attended Virginia Military Institute and joined the Center staff on April 8, 1929 as an Assistant Scientific Aide in the Propeller Research Tunnel. In 1951 he was assigned as Technical Assistant to the Associate Director.

Derring was active in community affairs and also contributed much to the Center's recruiting program. He became the Center's first recruiter in 1939 and during the past 25 years he has recruited many scientists and research workers for NASA.

Survivors include his wife, Mrs. Merrill Moore Derring; a daughter, Mrs. Peggy Lewis of Fairfax; and a son, Eldridge H. Derring Jr., at the University of Virginia.

NASA APPRENTICE SCHOOL

The Spring Semester of the Apprentice School will start on Monday, February 8 and classes will be held in the Apprentice classrooms located on the first floor of Building 586.

Courses which are being offered and the instructors are:

Monday - Machine Shop Theory, S. E. Devan; Physics I, V. G. Collins; College Algebra, Irving Abel and W. E. Nettles.

Tuesday - College Physics, G. C. Moen; Engineering Drawing II, C. P. Eichelberger; Machinist Handbook I, D. E. Williams, Trigonometry, J. A. Walker.

Wednesday - Industrial Electronics, R. H. Coultrip; Engineering Drawing II, C. W. Osborn; Metallurgy, H. A. Reid; Physics II, F. A. Kern; Trigonometry, R. B. Holt; Engineering Drawing III, O. E. Schrader.

Thursday - Strength of Materials III, R. M. Boykin; Fundamental Industrial Electronic Circuits, A. L. Jones; Environmental Testing - to be announced; Transistors II, R. O. Staib; Strength of Materials I, R. M. Moore; Descriptive Geometry, W. F. Hodge.

Friday - Essentials of Radio I, G. R. Bedsaul; Electronic Measurement Instrumentation, H. R. Long; D.C. Fundamentals I, J. A. Coleman; Industrial Electronics II, C. C. Berry.

FOR SALE: Mahogany tables, antique lamps, upholstered high back chairs, 8-foot sectional sofa. Miller, 595-0731.

FOR SALE: Gordon tractor with Briggs and Stratton motor and all attachments. Phillips, UN 8-5931.

WANTED: Passengers from Newmarket or Northampton to W.A. on 7:30 shift. Fred King, 4691.

FOR SALE: Belvin cabin boat with Willis Jeep engine and marine clutch - best offer. King CH 7-3817.

FOR SALE: 1954 Dodge with 1956 V-8 motor, 4-door, automatic transmission, excellent transportation for second car, also oil floor furnace capable of heating a 6-room house. King, CH 7-3817.

FOR SALE: Slide rule and drafting equipment suitable for engineering freshman. R. M. Jones, 596-7396.

FOR RENT: 3-bedroom house with built-in kitchen. Mangum, 596-0435.

Langley Researcher

VOLUME 4, NUMBER 3 LANGLEY RESEARCH CENTER FEBRUARY 12, 1965

LANGLEY BUDGETED FOR $155,000,000 FOR ACTIVITIES DURING NEXT YEAR

The NASA budget of $5.26 billion for the 1966 fiscal year beginning next July includes more than $155,000,000 for the Langley Research Center.

The NASA budget, now under consideration by Congress, provides $4,575,900,000 for research and development, of which about $85,000,000 is expected to be allocated to Langley. These funds will be used by Langley in the management of the Lunar Orbiter, Fire, Scout, Pageos, and a number of other flight projects, and for scientific investigations in wind tunnels and laboratories. The $85,000,000 figure is approximately the same as the amount being made available to Langley this fiscal year.

A total of $61,783,00 is budgeted for administrative operations of the Langley Center in the next fiscal year, an increase of eight per cent over the $57,258,000 authorized for the current year.

In addition, $8,250,000 is budgeted by NASA for the construction of four new facilities to be added to the quarter-billion dollar NASA research complex at Langley. This is nearly double the total of $4,575,000 authorized for the current fiscal year for construction at Langley.

The personnel requested for Langley for the coming fiscal year totals 4,308-- the same figure as presently authorized.

The following is a brief description and the amount sought for the proposed new facilities, all four of which are to be constructed in the West Area where most of the Center's wind tunnels and laboratories are located:

Flight Control Research Facility ($3,576,000): This facility, to be housed in an addition to the existing Data Reduction Center, will incorporate a variety of simulators and computing equipment into an integrated, flexible complex for conducting advanced research on the control of flight vehicles on future manned missions.

Life Support Technology Laboratory ($2,492,000): This facility would provide laboratory space for a variety of basic research to obtain and apply the technology necessary to equip future manned space vehicles of extended duration with optimum life support systems.

Magazine and test area for highly reactive chemical materials ($1,500,000): This construction will provide permanent type facilities for the conduct of solid rocketry testing with high energy modern propellants. The facility, to be located in an isolated site at Langley, is intended to be used in connection with Langley's continuing program of rocket motor development and flight programs and will supplement existing facilities in the Hypersonic Physics Test Area.

Increase research capabilities of 20-inch Mach-6 and Mach-8.5 wind tunnels ($682,000): This request involves the construction of a 60-foot diameter vacuum sphere and the use of an existing 41-foot diameter sphere in the operation of these wind tunnels.

HOOKER BUSY HELPING PREPARE FOR TRACKING OF NEXT GEMINI

Ray W. Hooker

Ray W. Hooker, former Chief of the Research Models and Facilities Division who left Langley last year to become the NASA Senior Scientific Representative in Australia, reports in a letter to the Center that the country down under is busily preparing for its participation in the two-man Gemini flight sometime this spring.

Australia operates seven tracking stations to help maintain contact with orbiting space vehicles and deep space probes, and has two others in the planning stage. Facilities in Australia will support future programs such as Project Apollo, the Langley-managed Lunar Orbiter, and many others.

Hooker's primary function in Australia is as liaison with the Department of Supply of the Commonwealth of Australia, the cooperating space agency which constructs, staffs and operates NASA facilities. His office is in the Department's Headquarters in Melbourne. Prior to his going to Melbourne last June, he served an orientation period in the Office of Tracking and Data Acquisition at NASA Headquarters.

The Gemini flight which has Hooker's attention at the moment will be the nation's first two-man space journey. Astronauts Virgil I. Grissom and John W. Young are scheduled to make the three-orbit trip, which will begin from Cape Kennedy. Recovery will take place near Grand Turk Island in the Bahamas.

Three flight experiments are planned, according to the Manned Spacecraft Center, including one by Langley to determine the effect that injecting coolant into the reentry ionization sheath has on communications during return of the spacecraft into the atmosphere.

Normally, voice communication is lost during reentry because radio signals of that frequency cannot penetrate the plasma sheath which builds up around the spacecraft. Langley has made extensive studies of this phenomenon and significant progress has been made toward understanding the fundamental nature of the problem and in alleviating radio blackout.

Hooker lives with his wife and son, Willard, 17, in a home formerly occupied by his predecessor-- Edwin P. Hartman, who recently retired from NASA. The house is about eight miles from his office in Melbourne, which Hooker describes

(Continued on page 8)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2375.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

DIAPER LINE. . .Announcing the birth of a son on February 1 is Edward T. Maher, Chief of Administrative Services Division. . .Celebrating the birth of a daughter on January 30 are Jimmie Lou, Analysis and Computation Division, and Larry Richardson, Research Model and Facilities Division.

REPRESENTATIVE TO VISIT HERE. . .Beverly Beale, Government-wide Service Plan representative, will be here on Wednesday, February 17 from 2 to 3 p.m. Employees having problems or questions concerning the plan may call Lois Harris, 2323, for an appointment.

NEWLY WEDS. . .Wedding bells rang on Saturday, January 23 when Anne Stora and Humbert Rockey, both of Instrument Research Division, took their final vows.

COURSE OFFERED. . .RCA Institute Incorporated is offering a course in Logical Design for Digital Systems which will be held four hours a day at the Center from April 19 to April 30. Persons interested in enrolling in the course are requested to call the Training Office, 2326.

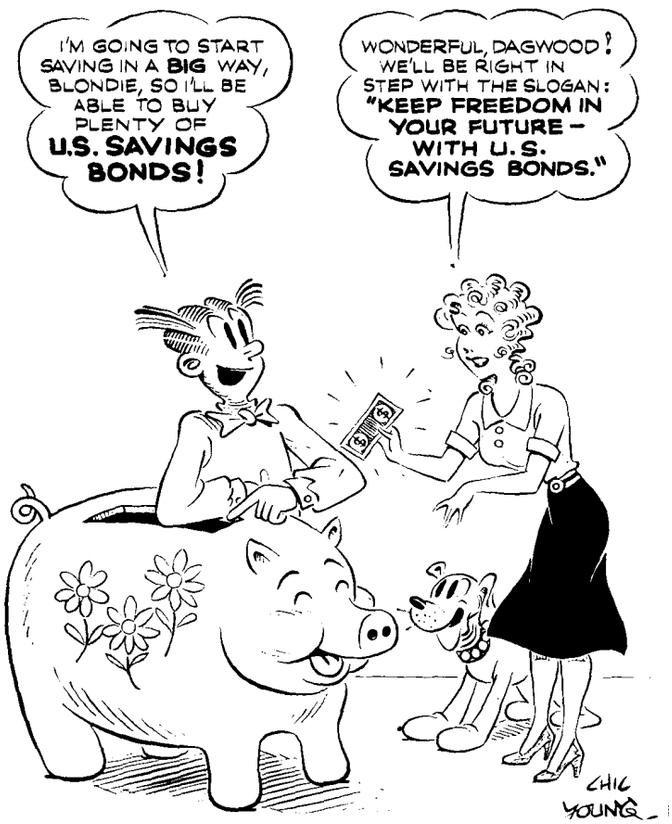
ASTRONOMY CLUB. . .The Astronomy Club will meet tonight at 7:30 at the Activities Building. The club telescope will be available for use if the weather is favorable. Light refreshments will be served.

SEAT BELTS. . .The crash took place in Virginia. The car was going downhill in excess of the speed limit. It came to a curve, partially crossed the center line, then sideswiped a truck-trailer. The car then spun around and left the road, but it did not overturn or stike another solid object. According to the authorities, the impact was not overly severe, but the driver died of a broken neck. The authorities believe that a seat belt would have saved him. In Virginia seat belts are mandatory in 1963 cars, but this car - a 1963 model - had none. The driver had them removed soon after he purchased his car. WHY? No one seems to know, and the driver isn't alive to tell.

FOR SALE: 1961 Mercedes 19SL with both tops. Hubbard, 596-7041.

FOR SALE: American Flyer train. Killmon, 723-4522.

FOR SALE: Wilson golf clubs including woods 1, 3, 4, 5, irons 2 through 9, pitching wedge, mallet head putter, Bagboy golf cart, golf bag, umbrella, tees, 3 new balls, 50 used balls - $150. McMillan, 596-7078.



CAFETERIA

The following menu will be served in the cafeterias during the week of February 15:

Monday - Cream of tomato soup, Spanish pot roast, breaded veal steak, ham and noodle casserole, spiced luncheon meat.

Tuesday - Cream of potato soup, beef stroganoff on egg noodles, grilled Canadian bacon and spiced applesauce, fried fish, grilled cheese sandwich.

Wednesday - Beef broth, roast beef, spaghetti with meat sauce, fried chicken, hot dog.

Thursday - Chicken-rice soup, grilled steak, fried scallops, chicken chow mein, baked hash.

Friday - Clam chowder, braised short ribs on buttered noodles, fried fan-tail shrimp, broiled fish, meat croquettes.

The menu for the week of February 22 is as follows:

Tuesday - Tomato-barley soup, baked Virginia ham, braised beef tips on noodles, Polish sausage, fish cakes.

Wednesday - Vegetable-beef soup, Spanish pot roast, grilled pork steak, fried chicken, fish sandwich.

Thursday - Chicken-noodle soup, grilled steak, shrimp Newburg, chicken croquettes, tamale pie.

Friday - Clam chowder, roast beef, stuffed flounder, broiled fish, barbecued sandwich.

FOR SALE: Air conditioner - 10,500 btu. Emery, PA 3-4398.

FOR RENT: 2-bedroom furnished house near Wythe Shopping Center. Morris, CH 7-6842.

DID YOU KNOW? This year 4,000 to 5,000 children will be born with Cystic Fibrosis, an inherited disorder affecting the lungs and digestion.

LANGLEY REQUESTS SCHJELDAHL TO BID ON ECHO-TYPE SPHERES

NASA has requested G. T. Schjeldahl Company, Northfield, Minnesota, to submit a bid for the construction of six inflatable 100-foot spherical satellites to be used in the United States geodetic satellite program. They will be nearly identical to Echo 1, in orbit since August 12, 1960, and will be named PAGEOS from the title Passive Geodetic Earth Orbiting Satellite.

PAGEOS is intended to be launched in 1966 into a near-polar orbit at an altitude of about 2,300 miles. As the 100-foot sphere reflects sunlight falling upon it, it will appear as a shining point source of light in the sky. Several camera stations will simultaneously photograph it against a star background to gather precise data for locating any point on Earth.

The Schjeldahl Company was chosen for the single-source procurement because it previously built both Echo 1 and Echo 11. The request for a proposal was issued by Langley Research Center which manages the PAGEOS Project under the direction of NASA's Office of Space Science and Applications. Separate technical and cost proposals are due by February 23.

NASA's request asks for the fabrication of six complete spheres, three of which are to be packed in metal flight-type canisters. The canisters will be procured under a separate contract.

The first PAGEOS sphere will be used for a static inflation test. The second sphere, designated a prototype, will be packed in a canister and used for extensive ground tests. The third, due 12 months after a contract is signed, is the primary flight article. The remaining spherical satellite assemblies will be used as back-up flight articles and spares. The Schjeldahl company will have 15 months to complete work under the contract.

Each PAGEOS sphere will be fabricated by cementing together 84 gores tailored from a tough plastic film known as Mylar. The plastic is 0.5 mils thick (a mil is one-thousandth of an inch). The outer surface will be coated with a thin film of vapor deposited aluminum, making the sphere highly reflective like a mirror.

Total weight of each sphere may not exceed 130 pounds. Before packaging, 30 pounds of subliming chemicals will be placed inside the sphere. When the sphere is ejected in space, the chemicals -- benzoic acid and anthraquinone - change rapidly from solids to gases, which will inflate PAGEOS to its full balloon-like shape.

NASA will require a carefully detailed program of reliability and quality assurance throughout the course of the PAGEOS fabrication contract.

WANTED: Driving combination from Riverdale Plaza to E.A. on 8 shift. Collins, 2365.

WANTED: Ride from Greenwood Farms to W.A. on 7:30 shift. Pat Hurt, 4807.

WANTED: Passengers from Deep Creek to W.A. on 8 shift. McConnell, 3451.

WANTED: Ride or driving combination from Edgehill to W.A. on 8 shift. Mann, 4545.

WANTED: Ride from Victoria Blvd. and Armistead Ave. to W.A. on 8 shift. Malone, 4796.

IT'S A GREAT DAY WHEN EVERYBODY WINS. Robert L. Girouard, President of the Langley Federal Credit Union, presents Ted W. Noland, Mechanical Service Division, with a $40 check as the first winner in the Fly-the-Flag contest. Ben Ellis (right), Director and member of the Building Committee, and Mike Pickens (left), Manager, offer their congratulations. Also with good reason to cheer are all other members of the Credit Union. The background sign confirms a Board announcement that an up-to-date Credit Union office building will soon be erected complete with adequate parking space and all modern conveniences.

KNOW YOUR CREDIT UNION

Normally, the fact that there was a winner in the Fly-the-Flag contest would rate top billing. It still is of considerable significance to Ted W. Noland, Mechanical Service Division, who was the recipient of a check for $40, and it could be of equal importance to other members of the Credit Union if it encourages them to put that decal on their car so that they, themselves, will be ready to win. But the overriding Credit Union story of this issue is the announcement by the Board of Directors that steps have been taken leading to the construction of a new office building. Land, adjoining the NASA West Area at the corner of Ames and Durand Roads, has been leased from the Air Force for this purpose. Col. Glenn B. Riggle, Hdq. TAC, is Chairman of the Building Committee while NASA members are Ben Ellis, Electrical Systems Division, and Boris Rosenfeld, Research Models and Facilities Division.

The building, as proposed, will be of approximately 4,000 square feet with the interior laid out for the convenience of the members. It will be a place they can take pride in and come to with pleasure and in dignity to save or borrow. Totally air conditioned, lobby space will be adequate for NASA paydays, individual enclosures will insure privacy for loan applicants, and better lay-out will improve service to all. It is expected that construction costs can be met by a contingency fund accumulated over the years for just such a purpose.

The final bit of icing is the fact that very definitely included in the plan is a private parking area fully capable of handling any reasonable amount of traffic.

As a salute to the new building and a possible favor to yourself (you just might win a prize), start "flying" that decal now.

FOUL WEATHER DRIVING

GAS KILLED A LOT OF PEOPLE LAST YEAR.
Two percent inhaled it.
Three percent touched a match to it.
Ninty-five percent stepped on it.

SPEED is the number one factor in vehicle accidents. Not in the sense that high speed alone is hazardous but driving too fast for conditions is. 70 mph on a modern freeway when the weather is clear is comparatively safe. Conversely 30 mph may be too fast if visibility is restricted and the road surface is slippery.

Over most of the Nation, December, January, and February are brutal months for the driver and the normal hazards encountered in vehicle operation are augmented by adverse road and weather conditions, poor visibility, ice, and snow.

The sun is low on the horizon. Rain, snow, and fog reduce visibility, sometimes to a few feet. Frost on the windshield and windows add to the handicap.

SLIPPERY ROADS. Driving under normal conditions on a dry paved highway, at a speed of 60 mph, we need 300 feet to bring our vehicle to a stop. If the pavement is coated with ice or snow it could take up to 1,000 feet to stop your car from 60 mph. The need to operate your vehicle according to conditions is obvious. Get the feel of the road by applying the brakes at low speed. Learn how to come out of a skid by turning the front wheels in the direction of the skid. If you lack experience in driving under adverse conditions, take it easy until you know you are in control. You cannot regulate the weather but you can regulate your driving.

SAFE FOLLOWING DISTANCE. One of the cardinal rules of safe driving is to allow plenty of operating distance between your car and the vehicle you are following. If the car ahead makes a sudden, impulsive stop or turn, you will have time to take evasive action. And remember, you will need 3 to 10 times normal distance to stop on ice and snow.

CARBON MONOXIDE poisoning is more prevalent in cold weather. You cannot see, smell, or taste these fumes, but they are deadly. Make certain there is enough air circulating in your car to avoid this hazard. Cold air is better than none.

VISIBILITY. When snow, sleet, rain, fog, and other conditions restrict your vision, speed should be reduced to the point where your ability to stop is well within your ability to see ahead.

THE DRIVER. Accept your responsibility. Condition your car to meet foul weather conditions. Check the tires, brakes, and steering. Then check yourself.

Many drivers, when involved in an accident are always quick to place the blame on outside forces. "The sun was in my eyes." "There was ice on the roads." "The car ahead stopped suddenly." Stop fooling yourself - the car doesn't cause accidents, nor does the road. And don't blame it on the weather. IT'S THE DRIVER for he is the only one in a position of control. He can, if he will, adjust his driving to meet existing conditions. He can, if he will, operate his vehicle in a cautious, considerate manner. He can, if he will, drive defensively and avoid accidents.

And it is the driver who must realize that vehicle accidents do not just happen - they have to be manufactured by a driver.

These accidents are the result of inattention, chance taking, excessive speed, recklessness, poor judgement, overconfidence, fatigue, emotional immaturity, and many other causes which only the driver can control.

Courtesy and consideration of others is the mark of a mature and socially responsible driver. Accept your responsibility, drive defensively, yield the right-of-way, obey the Golden Rule of the road and always drive so that your license will expire before you do.

"Step on the gas—or I'll be late for my sewing club."

HOW TO KEEP TAX REFUND GROWING

When you get your 1964 tax return form, take a look at Line 21 on Page 1, if you're using 1040, or Item 11 if you're using 1040A. You'll find how to hang on to your tax refund, if you're lucky enough to have one coming.

Those lines, if checked, can lead to a firm foundation for or supplement to added financial security. Which form you use doesn't matter (both give the same option of taking refunds in U.S. Savings Bonds); which line you check does.

When you check the Savings Bond line, you automatically assure yourself of two advantages: You provide an easy way of hanging on to your money and a sure way of making it grow 33-1/3 per cent bigger at maturity.

Here's how that check-mark goes to work for you: If you're entitled, for example, to a refund of $42, you will get a $50 face-value Series E Bond (cost $37.50), plus a check for $4.50.

Another good thing about that check mark - it also helps to strengthen our country's future security. Uncle Sam puts our bond dollars to good use in safeguarding our freedom.

NASA BOWLING LEAGUE

Mexicali Restaurant continued to lead Group A in the NASA Tenpin League with 54 wins and 26 losses. Unitary is in second place with 50 wins and 30 losses. Top scores were rolled by Walter Weller with a 258 game and Buddy Grist with a 623 set.

Odd Balls lead Group B with 52.5 wins and 27.2 losses. High scoring honors went to Aubrey Cary with a 243 game and 675 set.

Question Marks lead Group C with a record of 54 wins and 26 losses. Analogs and Barristers are tied for second with 51 wins and 29 losses each. Top bowlers for the week were Sidney Hall with a 244 game and 671 set and Nancy Taylor with a 232 game and 581 set.

GROUP A

Mexicali	54	26	Electronic Shop	40	40
Unitary	50	30	Short Circuits	34	46
Phantoms	49	31	Devious	32	48
Flyers	45	35	Hornets	29	51
Frame Ups	45	35	Payloads	29	51
Alley Cats	44	36	Raiders	29	51

GROUP B			GROUP C		
Odd Balls	52.5	27.5	Question Marks	54	26
Ivy Farms Shell	46	34	Analogs	51	29
Ranch House	45.5	34.5	Barristers	51	29
Ten Benders	45.5	34.5	ACD	48.5	31.5
Beats Me	44	36	Greenhorns	44	36
Misfits	43.5	36.5	Dillys	44	36
Cee Pees	42.5	37.5	Alley Oops	43	37
Galaxies	41	39	Strike Outs	41	39
A-OK's	40.5	39.5	Dopesticks	37.5	42.5
Flight Eng.	39	41	Spare Parts	35	45
Pinwigglers	36	44	Gliders	33	47
HMS	34	46	Bowling Belles	29	51
Malfunctions	25	55	Mets	26	54
Spare Oops	23	57	Lunar Tics	23	57

Light Machine Shop No. 1 continues to move ahead in the NASA Duckpin League with a record of 57 wins and 27 losses. High scores this week were rolled by John Dupere with a 163 game and 377 set and Mary Lou Wood with a 119 game and 317 set.

Lt. Mach. 1	57	27	Rebel Bombers	41	43
Ten Spots	45	39	Lt. Mach. 2	39	45
Tigers	43	41	Strike Outs	27	57

HARGRAVE DIES AT AGE 57

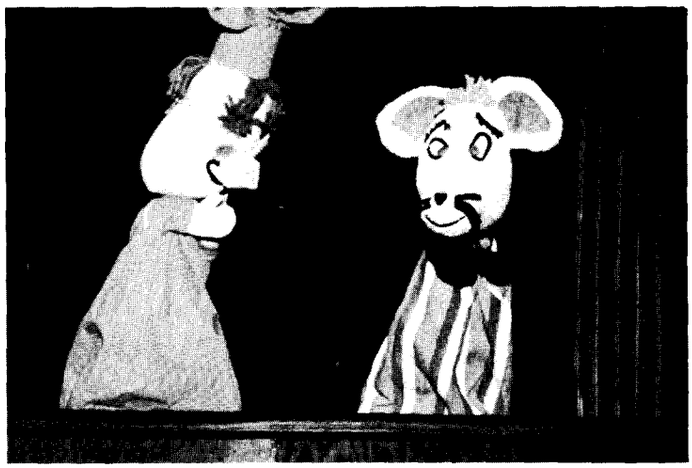
Louis G. Hargrave, Truck Driver in the Plant Maintenance Division, died last Saturday in Mary Immaculate Hospital.

Hargrave was born October 12, 1907 in Surry County. He attended Oak Grove School in Surry County and worked for the Newport News Shipbuilding and Dry Dock Company and the Norfolk Ferry organization before joining the Centstaff on January 29, 1952.

WANTED: Ride or driving combination from Brentwood area to E.A. on 8 shift. Redd, 2289.

WANTED: Driving combination from Bethel Pk. to E.A. on 8 shift. Townsend, 2249.

WANTED: Fifth driver from Riverside to W.A. on 7:30 shift. Carlson, 4711.



Featured at the Children's puppet show will be Nancy Woodward and her Porpoise Puppets. Two shows will be held on Saturday, February 27 at the Activities Building.

CHILDREN'S PUPPET SHOW

The Activities Association will sponsor a children's puppet show on Saturday, February 27 at the Activities Building.

Featured on the program will be Nancy Woodward, Norfolk, and her Porpoise Puppets.

Two shows have been planned for the afternoon with the first one starting at 1:30 and the second scheduled to begin at 3 o'clock.

Tickets are twenty-five cents each and they must be purchased in advance. They are available from the District Representatives or at the Activities Building.

VALENTINE DANCE PLANNED

The Activities Association will sponsor its first dance of the year tomorrow night. The theme of the dance will be Valentine's Day.

Music for the affair will be furnished by Jerry Fisher and his band and dancing will start at 9 p.m. and continue until 1 a.m.

Tickets may be purchased from your Activities Representatives for three dollars per couple. The price will include set-ups for the entire evening. Table reservations may be made by purchasing tickets in advance and calling Bruce Amole, 4583.

Give your wife or girl friend her favorite Valentine by taking her out for an enjoyable evening of dancing at the Activities Building.

FOR SALE: 1954 Buick Super - 2-door. Norris, 245-1726.

FOR SALE: Modern sofa, opens into double bed, foam rubber cushions. Frank, 596-2513.

FOR SALE: Sailboat and trailer - Firefly class - $500. Shipp, 596-4192.

FOR SALE: 1957 Ford Fairlaine 500, 4-door, V-8, power accessories and air conditioning. McPherson, TW 8-5072.

NOTICE: Persons interested in going skiing at Seven Spring, Pa. during week of February 21 are requested to contact Tom Harris, 838-2902.

FOR SALE: Corelli black suede pumps size 9B - $5, Troylings white strap shoes size 9B - $10, boy's Shetland wool plaid sport coat size 8 - $8.50. Johnson, 851-2624.

LOW-SPEED CHARACTERISTICS STUDIED

Existence of a "tornado-like" airflow along the leading edge of a special airplane wing shape is giving promise to the creation of good slow speed characteristics of a wing that has been primarily designed for high-speed efficiency.

Called "vortex airflow," the phenomenon has been visually observed and studied by aeronautical engineers at Ames Research Center on a supersonic jet airplane with a redesigned wing.

The desire to minimize the landing speeds for the proposed supersonic transport has led aeronautical engineers and designers to consider the advantageous effects of the leading-edge vortex flow. Full-scale data on this type of vortex flow are being obtained by Ames engineers in the flight studies.

The vortices classically associated with wings are horizontal whirlpools or "tornadoes" of air that are always present when a wing develops lift. These normally trail back away from the airplane from a point near each wing tip. They result from the difference in pressure between the wing upper and lower surfaces. When a sharp leading edge is used, however, together with certain planforms (shapes), additional vortices result which extend along the leading edge in a spanwise direction. These leading-edge vortices improve the lift of the wing much as do landing flaps and can actually replace high-lift devices such as flaps and slats and thereby simplify the wing design with less penalty in high-speed performance.

The vortex airflows on airplane wings that trail back from the wing tip have been studied both theoretically and experimentally for many years, and are well understood. The mechanism of the leading-edge vortex flow, which results from a continuous separation of airflow along the sharp leading edge, is not as well known.

A Douglas F5D fighter-size aircraft is being used for the flight research phase of the study. The wing of the supersonic plane has been re-worked by Ames craftsmen to simulate a wing that might be feasible for future supersonic commercial air transports.

The re-worked wing is called an "Ogee planform" wing, the term "Ogee" being an architectural term for an S-curve shape and which is characteristic of the leading edge of the F5D wing when viewed from above. This shape possesses a high leading-edge sweepback angle close to the fuselage, which is important in generating the leading-edge vortex.

Following redesign of the wing, the F5D was first tested in Ames' large-scale 40- by 80-foot wind tunnel, the world's largest, to obtain full-scale aerodynamic data on the planform wing and to assure the plane's capability for actual flight.

Additional studies of a theoretical nature are currently being made under a NASA contract with Vidya Division, Palo Alto, California, a division of Itek Corporation.

A unique aspect of the flight research study is the use of the existing fighter-size aircraft with its redesigned wing to simulate transport aircraft flight conditions. By modifying the existing aircraft, costs are considerably reduced from those that would be required if an aircraft was specifically built for such a research effort.

The vortex airflow research studies are part of a research program sponsored by the Office of Advanced Research and Technology, NASA Headquarters.

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A whirlpool of air or "vortex airflow," seen above as a white wisp flowing over the black portion of the wing of a supersonic jet, may lead to more efficient low-speed characteristics of high-speed aircraft such as supersonic transports. This specially modified Douglas F5D airplane is being used as a flying research vehicle by Ames Research Center to investigate vortex airflow on a "Ogee planform" wing that might be used on future high speed aircraft. White tufts placed on the black portion of the wing align themselves with the direction of airflow on the wing surface and thus establish a flow pattern for visual observation.

NASA HEADQUARTERS FORMS NEW RESEARCH DIVISION AT AMES

NASA has formed a new Headquarters division to study attractive future missions for the purpose of better defining its advanced research and technology programs.

The division will be a part of NASA's Headquarters Office of Advanced Research and Technology and will be located at the Ames Research Center.

Dr. Raymond L. Bisplinghoff, Associate Administrator for Advanced Research and Technology, explained that the reason for locating the division at a field research center is to provide it with the environment of extensive scientific and technical knowledge which is found only where research programs are in progress. The center location will serve to isolate the division from the day-to-day problems of management at Headquarters and it will provide ready access to modern computing equipment for its work. Administrative support will be provided by Ames.

"The division will be organized along aeronautical and space mission lines and will be staffed by highly qualified technical and scientific talent," Dr. Bisplinghoff said. "Its staff will be drawn from all of NASA's research centers, to serve tours of duty ranging from one to several years. We expect to have a continuing influx of new people and new ideas."

Initially, the Mission Analysis Division of Ames will be transferred on a tour-of-duty basis to the new Headquarters division, thereby forming its nucleus. The staff is expected to number as much as 50 members, eventually.

WANTED: Ride or driving combination from Whealton Heights to W.A. on 8 shift. Williams, 4432.

EQUAL EMPLOYMENT POLICY CITED

Langley Research Center's long standing policy has been to recruit, appoint, and assign employees on the basis of merit alone. This policy has been reaffirmed many times, and in September 1963 an Affirmative Action Plan was formulated at Langley by the Personnel Division to focus attention on the goal of equal employment opportunity and to seek new means of fulfillment of the policy. Center management endorsed the plan and moved on several fronts to disseminate information on the policy to supervisors through the Supervisors' Training Program and at the Director's weekly staff meetings. Despite the breadth of these communications, it is deemed advisable to use this media to again emphasize this commitment and the reasons for it.

Charles F. Barnett, Personnel Officer, explained the reason for the Affirmative Action Plan at the time of its formulation by saying, "Our responsibility, both as Federal employees and as individual citizens is to insure that equality of opportunity is not just a promise but a fact. What we have done in formalizing this plan is to reaffirm our policy of employment and opportunity on the basis of training, skill, and qualifications. In developing this plan, we have set our sights on new areas of recruitment and training, as well as improvements in community relations."

Center activities with regard to the Equal Opportunity Program of the Government as outlined in Executive Order 10925, are reviewed periodically by the Center's Deputy Compliance Officer and Center management officials to assure compliance. These reviews indicate that consistent progress is being made in implementation of the program.

Following a recent review of personnel actions at Langley, Dr. Floyd L. Thompson, Director, commented, "The progress in implementing the Affirmative Action Plan has been encouraging and is consistent with the long standing policy of hiring the best qualified personnel available. The assistance given the Personnel Division by staff members and supervisors has been gratifying. There is no easy solution to the entire problem of equal opportunity," Dr. Thompson continued, "because so much of the problem is related to the need for additional educational opportunities. In the final analysis, however, there is an important reason for giving our best management attention to making equal opportunity come true and that is because we cannot afford to overlook any talent when it is so badly needed in our work. We must always be alert to the challenge of finding qualified personnel who are best suited to the work we have at hand."

Edward T. Maher is the Deputy Compliance Officer for Langley Research Center. The Agency Compliance Officer is Alfred S. Hodgson, NASA Headquarters.

WANTED: Ride or driving combination from Presidential Apartments to W.A. on 8 shift. Frank Bugg, 4540.

DID YOU KNOW? Every year 250,000 American babies are born with a serious birth defect. No one knows who may be next. No family is immune from this threat. You can help meet this emergency by supporting the March of Dimes.

DID YOU KNOW? Multiple sclerosis is a disabling disease striking young men and women between ages 20 and 40. It attacks the substance protecting nerve fibers in the central nervous system. MS and related diseases have stricken an estimated 500,000 Americans.

CHARLES H. BAHNSON RETIRES

Charles H. Bahnson

Charles H. Bahnson, Experimental Machinist in the Light Machine Shop Section, Mechanical Service Division, retired from the Center last Friday after serving 30 years with the Federal Government.

Bahnson was born February 8, 1910 in Racine, Wisconsin. He attended high school in Racine and also attended Racine Vocational School. He served his apprenticeship as a toolmaker with the John Oster Manufacturing Company in Racine.

Bahnson started his Government career on December 4, 1934 as a toolmaker at the Norfolk Navy Yard. He transferred to the Center on May 13, 1946.

AIAA MEETS FEBRUARY 17

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics will meet on Wednesday, February 17 at the Holiday Inn, Hampton.

Don Rogerson, Chief Project Engineer, B-70 Division, North American Aviation, Incorporated, will be the guest speaker. He will give a "Progress Report on the B-70 Flight Program."

The B-70 successfully completed its first series of flight tests last fall. Rogerson will discuss some of the new concepts and technical developments involved in this aircraft program. He will show a short film of the first four flights which investigated take-off accelerations, handling qualities, flight through the transonic region and landings. He will also describe plans for the next phase of flight tests and the future research program for the aircraft.

Rogerson was appointed Chief Project Engineer in 1961 when the B-70 Division was established within the Los Angeles Division of North American. Prior to this appointment, he was associated with propulsion system development for the AT-6, B-45, P-51, F-86, and F-100 airplanes and the X-15 research vehicle. Rogerson received his B.S. degree from Tufts University and has been with North America since 1942.

The meeting will be preceded by a social hour at 6 p.m., followed by dinner at 7 and the meeting at 8. For reservations call L. W. Enderson, 596-6702; Harleth Wiley, LY 6-4427, or Bill Michael, LY 5-0463, by February 15.

DID YOU KNOW? Cardiovascular diseases afflict 10,000,000 Americans and cause 54 per cent of all deaths. Your Heart Fund fights heart disease through programs of research, education and community service.

DID YOU KNOW? A major cause of blindness is glaucoma, an insidious disease that can destroy vision without pain or warning. The National Society for the Prevention of Blindness estimates that more than 1,300,000 American adults have glaucoma - and half don't know it. Through screening programs and public and professional education, the Society strives to find these Americans while there is time to save their sight.

James W. Sparrer, Film Processing Machine Operator in the Photographic Division, represents one of the many NASA families who has benefitted directly or indirectly from the efforts of the National Health Agencies. Sparrer, who was blinded several years ago, received assistance from the Virginia Society for the Prevention of Blindness during his rehabilitation period.

ASM MEETS FEBRUARY 22

The Hampton Roads Chapter for the American Society for Metals will meet on February 22 at Eli's Restaurant in Hampton. Dr. Fred Rosi, Materials Research Laboratory of RCA, will be guest speaker. His topic will cover the utilization of "Materials for Direct Energy Conversion."

Dr. Rosi is a graduate of Yale University, receiving a B.E. degree in Metallurgy in 1942. He received his M.E. degree in 1947 and Ph.D. degree in 1949 from the same institution. He was awarded the graduate laboratory assistantship in the Department of Metallurgy at Yale, 1946-1949.

From 1943 to 1946 he served in the U.S. Navy. After attending Mine Warfare School at Yorktown, Va., he served as Engineering Officer on the minesweeper, USS Sprig, in the Atlantic and Pacific theatres. He holds a reserve commission as Lieutenant junior grade.

Dr. Rosi was an Engineering Specialist in the theoretical metallurgy group at Sylvania Electric Products, Inc., from 1949 to 1954. At Sylvania he was engaged in fundamental research on mechanical properties and recrystallization phenomena in various metals and alloys. Since March 1954 he has been with RCA Laboratories where he is head of the Semiconductors, Superconductors, and Metals Research section which is engaged in the preparation of elemental and compound semiconductor crystals for transistor and thermoelectric applications, and in research on superconductivity and electronically active organic materials.

The meeting will be preceded by a social hour at 6:30 followed by dinner and the meeting. For reservations call H. Herring, 4870, or F. W. Schmidt, 3439.

FEDERAL SERVICE CAMPAIGNS

The annual fund raising campaigns of the National Health Agencies and the Federal Service Joint Crusade is being conducted at the Center through March 15. Bruce Amole Personnel Division, has been appointed chairman and he will be assisted by Nancy Holt in West Area and Ruth Verell in East Area.

Employees have been given contribution envelopes. All donations should be turned in to the attendance clerks who will send them to division monitors.

Through the International Service Agencies of the Federal Service Joint Crusade, each of us can assist in relieving sickness, poverty, hunger, and oppression of many who are our friends overseas. Included in this group are Radio Free Europe, American-Korean Foundation, Project Hope, and CARE.

The National Health Agencies campaign provides an opportunity for us to assist in the continued fight for better health standards in America - through service, education, and research. Sooner or later, at least one member of every family in Virginia will benefit from the services of one or more of the National Health Agencies. Unfortunately, no family is immune to disease or chronic illness. Included in this campaign are the following agencies:

Muscular Dystrophy Associations of America, National Association for Mental Health, National Multiple Sclerosis Society, National Society for Crippled Children and Adults (Easter Seals), National Cystic Fibrosis Research Foundation, National Foundation-March of Dimes, National Society for the Prevention of Blindness, United Cerebral Palsy Association, American Cancer Society, and American Heart Association.

President Johnson pointed out that your personal support of CARE, Radio Free Europe, Project Hope and the American-Korean Foundation will do much to help these agencies combat the poverty, hopelessness and fear which haunt so many of our fellow men.

The President also urged Federal employees to give more than ever before to help the attack on disease and disability. He stated that the voluntary Health Agencies aim to increase their medical research, intensify their informational activities to the general public and physicians, and broaden their present programs of community service.

HOOKER WRITES TO CENTER

(Continued from page 1)

as "a beautiful city," with many spacious parks and recreational areas. His wife Mary Anne is active in a number of women's organizations in the area. Willard attends school in Melbourne and is a member of the track team, specializing in the high jump.

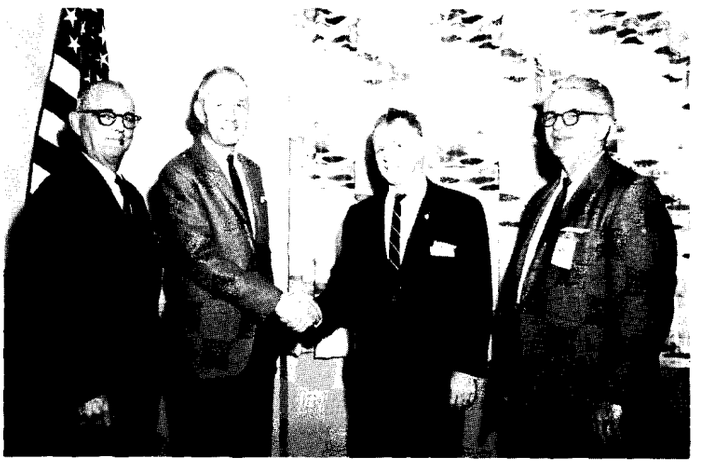
Hooker and his family had the unusual experience of enjoying the Christmas holidays at the peak of summer in Australia-- the seasons being somewhat reverse of those in the United States. He and his family spent the Yuletide vacation in Tasmania, just below the Australian mainland. They toured the area by automobile from their vacation retreat at Hobart in the lower part of Tasmania.

In connection with his liaison duties, Hooker has traveled over much of Australia and has enjoyed working with the people of that country. He has visited NASA tracking stations throughout Australia and commutes frequently between his home station of Melbourne and nearby Canberra.

DR. EUGENE M. EMME ATPH

Langley Researcher

VOLUME 4, NUMBER 4 LANGLEY RESEARCH CENTER FEBRUARY 26, 1965



G. T. Spain (second from left), Safety Officer at the Naval Air Station in Norfolk and Executive Chairman of the Hampton Roads Chapter of the Federal Safety Council, presided at the meeting of the Council which was held at the Center on February 11. Shown with Spain are (from left): T. A. Harris, Executive Safety Committee; Charles J. Donlan, Langley's Associate Director, and Duane McSmith, Safety Officer.

IMPORTANT SAFETY MEETINGS HELD AT CENTER THIS MONTH

Two important safety meetings were held at the Langley Research Center during February. The Executive Safety Committee met on February 5 and the Center was host on February 11 for the Hampton Roads Chapter of the Federal Safety Council.

T. A. Harris, Committee Chairman, presided at the February 5 meeting at which NASA's 1964 accident experience, with special reference to Langley's record, was reviewed by George D. McCauley, NASA Safety Officer. McCauley stated that NASA's 1964 disabling injury frequency rate of 2.4 was far better than the overall rate of 8 for the federal service and that Langley was slightly better than the NASA rate. However, he noted that there has been a gradual upward trend in Langley's experience over the past several years. The accident frequency rate is the index of the number of disabling injuries occurring in each million manhours worked.

It was brought to the attention of the committee that 5 disabling injuries had occurred at the Center in January for a local frequency rate of 7.19, as compared to the Center's record which was below 2 for the years 1955-1963. Improvement in the record as reported for January can be improved by great vigilance on the part of every employee in the safe performance of his duties and through his cooperation in reporting or eliminating any unsafe working conditions observed.

At the Federal Safety Council meeting on February 11,

(Continued on page 2)

LANGLEY TO NEGOTIATE SCOUT SUPPORT MANAGEMENT CONTRACT

A unified contract to provide complete system management for the Scout launch vehicle will be negotiated by NASA and Ling-Temco-Vought, Inc., Dallas, Texas.

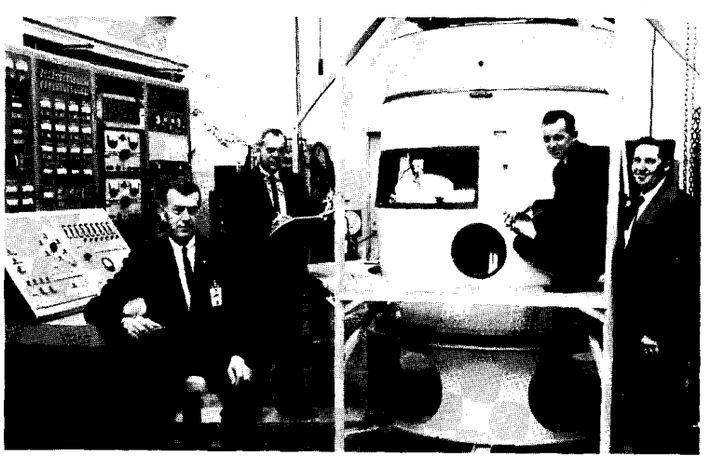
The single contract will continue support services LTV has been providing under several different contracts awarded at various times during the course of Scout system development.

Langley Research Center, which is responsible for Scout project management services, will conduct the contract negotiations. The new contract is intended to cover a period of 16 months beginning in July 1965, and is expected to amount to about $8,000,000.

The proposed contract will continue all services now provided except vehicle procurement and research and development effort which will continue to be contracted separately. It will require the contractor to support Scout launches at a rate of one each month.

Work specified in the proposed contract asks the con-

(Continued on page 6)



Activities in preparation for the second Project Fire launch, scheduled this spring from Cape Kennedy, have begun with the delivery of the Velocity Package, built by Ling-Temco-Vought, Incorporated. Some of the Langley personnel engaged in these activities are shown in the Cape Kennedy Hangar O, which has been assigned to Project Fire. From left are: James N. Chacamaty and William B. Dunn, Mechanical Service Division; John W. Schwartz, Electrical Systems Division, and Jack Bettis, Flight Reentry Programs Office. Project Fire consists of two flights along the Eastern Test Range, the first of which was successfully launched April 14, 1964. An instrumented reentry package is placed in a ballistic trajectory by an Atlas D launch vehicle. The program, managed by Langley Research Center, is organized to obtain research data on total and radiative heating, radio signal attenuation, and material behavior during atmosphere entry at a velocity of about 25,000 mph.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2375.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEWLY WEDS. . .Wedding bells rang last Saturday when Anne Ensley, Personnel Division, took her final vows with Vance Overbay, Newport News, at the Tabernacle Methodist Church in Poquoson. Margaret Simonton, Personnel, was a bridesmaid and ushers were Leonard S. Mayo, Instrument Research Division, and Grover C. Collie, Mechanical Service Division. Mary Carmines, Personnel, was mistress-of-ceremonies.

DIAPER LINE. . .Seeing double these days is Jackie Butler, Flight Vehicles and Systems Division. He became the father of twin sons on February 3. . .Weighing in at seven pounds, ten ounces on February 6 was John B. III, son of John Graham, Lunar Orbiter Office. . .Word has been received at the Center that Shirley Brown, Analysis and Computation Division, became the mother of a seven pound, ten ounce daughter, Anne Marie, on February 14. . .Glenn B. Jeffcoat, Flight Vehicles and Systems Division, became the father of a seven pound, nine ounce son on February 8. . .Passing out cigars is Uriel Lovelace, Applied Materials and Physics Division. He became the father of a daughter on February 5. . .Announcing the birth of a son on February 3 is John D. Antinori, Mechanical Services. . .Celebrating the arrival of a son on February 2 is Wallace R. Conway, Flight Vehicles and Systems. . .John E. Hubbard, Mechanical Services, became the father of a daughter on February 2.

REPRESENTATIVE TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on March 9 from 3 p.m. until 4 p.m. Employees having problems or questions concerning the plan may call Lois Harris, 2323, for an appointment.

ENGAGEMENTS. . .Jules M. Miller, Research Staff Office, has announced his engagement to Betty Lear, Newport News. No date has been announced for the wedding. . .A Center romance reached the engagement stage when Melba Donnell Smith and John James Catherine, both of Dynamic Loads, announced their plans to wed. . .Making plans for an April 24 wedding are Martha Jane Pharr, Structures Research, and Don Morton Robinson, Instrument Research. . .Pamela James, Electrical Systems, has announced her engagement to William C. Verniel, Hampton. The wedding will take place on March 27. . .Making plans to desert the bachelor ranks is Bert Cockrell, Instrument Research. He is engaged to Hilda Lee Melton, Hampton. No date has been announced for the wedding.

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CAFETERIA MENU

The following menu will be served in the cafeterias during the week of March 1:

Monday - Beef broth, corned brisket of beef, grilled pork chops, knockwurst, baked hash.

Tuesday - Chicken-noodle soup, half-pound chopped steak, baked ham, fried chicken, Irish omelette.

Wednesday - Minestrone soup, roast beef, turkey cutlet, broiled fish, tuna-noodle casserole.

Thursday - Cream of tomato soup, grilled steak, ham loaf, chipped beef on toast, meatless ravioli.

Friday - Clam chowder, Swiss steak, salmon-cheese loaf, fried fish, Spanish frankfurters.

The menu for the week of March 8 is as follows:

Monday - Puree of bean soup, roast beef, grilled Canadian bacon with apple sauce, sauteed chicken livers, fish cakes.

Tuesday - Tomato-barley soup, pot roast of beef, roast pork, spaghetti with meat sauce, grilled cheese sandwich.

Wednesday - Split green pea soup, baked Virginia ham, veal cutlet, broiled fish, tamale pie.

Thursday - Chicken-vegetable soup, grilled steak, smoked pork sausage, fried chicken, fish sandwich.

Friday - Clam chowder, fried clams, hot roast beef sandwich, broiled fish, barbecued sandwich.

IMPORTANT SAFETY MEETINGS

(Continued from page 1)

members were addressed by Phil Edge, Dynamic Loads Division, who discussed noise problems associated with supersonic aircraft and space flight and described some of Langley's research in noise and the facilities in which it is conducted.

Staff members are reminded that the Federal Employees Compensation Act regulations require that all injuries be reported on Form CA-1 within 48 hours. This form is available at either of the NASA Dispensaries or from the Employee Services Branch Office.

ACTIVITIES ASSOCIATION'S CALENDAR OF EVENTS

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
FEBRUARY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	1 Department Meeting	2 Bridge Club Model Club	3 Basketball 5 - 9 p.m. ASH WEDNESDAY	4 Basketball 5-9 p.m.	5 D.V.S Party	6 Flight Mechanics Section Party
7	8 Basketball 5 - 9 p.m.	9 Bridge Club	10 Basketball 5 - 9 p.m.	11 Payday G ame Night 8 p.m.	12 Equipment Service Section Party	13 8-foot-High Temperature Structures Party
14	15 Basketball 5 - 9 p.m.	16 Bridge Club	17 Basketball 5 - 9 p.m. ST. PATRICK'S DAY	18 Personnel Div. Party	19 IRD Party	20
21 Basketball Playoffs 2 p.m.	22 Basketball Playoffs 7 p.m.	23 Bridge Clug	24 Final Basketball Playoffs 7 p.m.	25 Payday Game Night 8 p.m.	26 Maintenance Division Party	27
28	29	30 Bridge Club.	31	APRIL 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30		

1965 MARCH 1965

BROTHERHOOD WEEK

President Johnson, in a recent memorandum to Heads of Executive Departments and Agencies, announced that Brotherhood Week will be observed during the week ending February 28.

In his message, the President stated:

"Strong differences among our people have made our democracy dynamic. But when disagreement degenerates into discrimination, when firm conviction corrodes into bigotry, when healthy differences become the basis for sick divisions, America's strength is sapped and our cause is crippled.

"I hope that each Department and Agency will, in its own way, undertake during this week to emphasize the need for all citizens to work throughout 1965 toward the fuller realization of a decent society, respectful of differences of ethnic background, race and religion and responsive to the goal of equal opportunity for every citizen."

PROFESSORS TO VISIT HERE

Dr. Thomas E. Gilmer Jr., Professor of Physics, Virginia Polytechnic Institute, will visit the Center on March 8 to discuss the graduate program in Physics.

Professor Dan H. Pletta, Head of the Department of Engineering Mechanics at VPI, will visit the Center on March 16 to discuss the graduate program in Engineering Mechanics.

Employees wishing an interview with the visitors should call the Training Office, 2293, for an appointment.

APPRENTICE HONOR ROLL

Training officials announced that 24 apprentices completed the Fall Semester with an average of 96 or above.

Members of the honor roll are as follows:

Ramon P. Barr, Thermal Projects; Horace E. Bellamy, Reentry Physics; David R. Brooks, 16-foot Tunnel; Mercer D. Burt, Polymer Lab; Grover C. Collie, Allen N. Milton, and Warner W. Smith, General Electrical Services; Raymond N. Crockett and Donald R. Nelson, Heavy Machine; William W. Fernald, James F. Garvin, and James R. Smith, Light Machine; Glenn A. Gates, Fatigue Lab; Billy G. Holliday, Electrical Systems Analysis; Stephen C. Irick and John E. Oakley, Dynamic Model Shop; Virgil S. Laney and Bordie D. Poole, Electronic Shop; Thomas K. Lusby, Cecil G. Phillips, and Wayne W. Rohrbach, IRD; Edward H. Ostwald, Instrument Construction; Kenneth F. Test, Ground Support Systems Section, and Davis B. Wright, Research Projects and Models.

IAM MEETING NOTICE

The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, March 2 at 7 p.m. at the Central Labor Union Hall, Newport News.

WANTED: Ride or driving combination from Sussex-Hampton area to E.A. on 8 shift. Blackwell, 2292.

WANTED: Two alternate drivers from Maxwell Gardens area to E.A. on 8 shift. E. Horton, 2253.

WANTED: Passengers from Deep Creek section to W.A. on 8 shift. McConnell, 3451.

VOLUNTEER RESCUE SQUAD SERVES CENTER STAFF

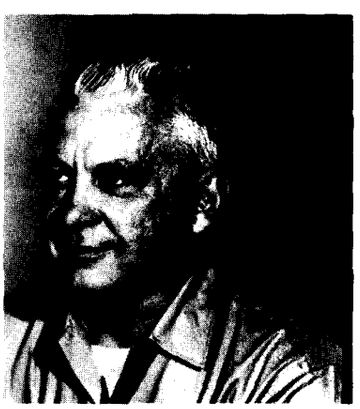
Harold L. Shaw

Claude F. Burge

Edward L. McClelland

W. Kent Smith

John W. Whitmore



George F. Lemke

Ralph E. Moscater

Paul R. Thomas

When the emergency code call rings, eight members of the Center's Rescue Squad are ready to answer the call within minutes. They serve as ambulance drivers and assist the nursing staff in administering first aid and other emergency treatment.

The members of this volunteer group are Harold L. Shaw and Claude F. Burge, both of Procurement Division; Edward L. McCelland, Instrument Research Division; and W. Kent Smith, John W. Whitmore, George F. Lemke, Ralph E. Moscater, and Paul R. Thomas, all of Mechanical Service Division.

All members of the group have taken Red Cross First Aid courses which are offered by the Employee Services Branch and most of them serve as members of Rescue Squads in the surrounding communities including Hampton, Newport News, and York County.

Shaw is a Procurement Assistant in Procurement. He served almost ten years in the U.S. Army and joined the Center staff on February 5, 1951.

Burge is also a Procurement Assistant. He entered on duty November 15, 1951 and served in the U.S. Navy from 1953 to 1955.

McClelland is an Experimental Electronics Mechanic. He served eight years in the U.S. Marine Corps and started his NASA career on December 5, 1960.

Smith is an Experimental Machinist Leader in the Heavy Machine Shop. He worked for seven years at the Newport News Shipbuilding and Dry Dock Company and entered on duty at the Center on April 11, 1946 as a machinist.

Whitmore is an Experimental Machinist in Heavy Machine Shop. He entered on duty September 29, 1948 as an Apprentice Machinist and graduated from the Apprentice School in 1952. He served in the U.S. Navy for one year and in the Army for one year.

Lemke, who is a member of the night shift group, is a Metal Modelmaker in Heavy Machine Shop. He previously worked at the Norfolk Naval Shipyard and joined the Cent-

Shown above is the Center's new 1964 International Harvester ambulance. It is equipped with oxygen, a wheel chair, a one-man wheeled litter, and an inhalator-resuscitator.

John R. Nayadley

Roy F. Brissenden

Thomas R. Turner

Richard W. Storey

Robert M. Peterson

FIVE PRESENTED CASH AWARDS

Five staff members recently received letters of commendation and cash awards from the Langley Incentive Awards committee for sustained superior performance.

Receiving the awards were: John R. Nayadley, Instrument Research Division; Roy F. Brissenden, Space Mechanics Division; Thomas R. Turner, Full-Scale Research Division; Richard W. Storey, Instrument Research Division, and Robert M. Peterson, Flight Mechanics and Technology Division.

The citations read as follows:

Nayadley - "For his outstanding work in developing three new pieces of electronic equipment while carrying out his normal full-time duties."

Brissenden - "For outstanding contributions in the design, construction and operation of the Langley Rendezvous Docking Facility."

Turner - "For his exceptional performance in the investigation of the effects of ground proximity on V/STOL configurations and especially for the development of techniques of simulating the effects of ground proximity on very high-lift configurations in wind-tunnel tests."

Storey - "For outstanding work in development of a means of measuring gas density in hypersonic simulators."

Peterson - "For the exceptionally high quality of maintenance on the electronic equipment associated with the variable stability helicopter and for numerous contributions toward improving and expanding the variable stability system."

WANTED: Driving combination from Wilkins Park (Marple Lane) to W.A. on 7:30 shift. W. L. Jones, 4766.

WANTED: Ride from Mohawk Rd. to E.A. on 8 shift. Payne Parker, 2298.

WANTED: Ride or driving combination from Virginia Beach to W.A. on 7 shift. Williams, 4651.

er staff on December 27, 1950 as a Machinist.

Moscater, who is also a member of the night shift group, is an Experimental Machinist Lead Foreman in Heavy Machine. He joined the Langley staff on April 14, 1941.

Thomas is an Experimental Facilities Mechanic in Research Facilities and Service Branch. He attended the College of William and Mary and the University of Virginia. Before joining NASA he worked as a photographer in Honolulu and taught school in Baghdad, Iraq, and in Gloucester County. He started working at Langley on July 14, 1948.

NASA MEETING SET FOR MARCH

NASA will get a first-hand report March 1-3 on its university research program and evaluate its success and future potential.

About 600 university researchers and NASA representatives will meet in Kansas City, Mo., at the NASA-University Program Review Conference primarily for a hard look at what has been accomplished in the NASA-supported programs. The meeting is sponsored by NASA.

A second objective of the three-day meeting will be to acquaint non-participating universities with research projects now underway and broaden their knowledge of the national space effort with detailed discussions of NASA's overall effort.

About 200 universities and colleges are participating in NASA-supported research programs.

NASA Administrator James E. Webb said the series of meetings will enable NASA to judge the impact the exploration of space is having on the university. Throughout the discussions, NASA will examine the potential for further work, the requirements for expansion or change in scope of activities, and the proper methods for achievement.

"It is also believed," he said, "that these sessions will be of mutual benefit to university scientists as they perceive the growing body of science and technology which is unifying many of the separate disciplines of the classical sciences, and permitting a more concerted attack on the challenging problems of our venture into space."

PUPPET SHOW TOMORROW

Center employees are reminded that the Children's Puppet Show, sponsored by the Activities Association, will be held tomorrow afternoon at the Activities Building.

The program will feature Nancy Woodard, a Norfolk entertainer, and her Porpoise Puppets.

Two shows have been planned for the afternoon with the first one starting at 1:30. The second show has been rescheduled from 3 o'clock to 3:30.

Tickets are twenty-five cents each and they must be purchased in advance. They are available from the District Representatives or at the Activities Building.

WANTED: Fifth driver from Tide Mill Farm or Riverdale area to W.A. on 8 shift. Marcum. 4705.

FOR SALE: Chrome custom made automobile trailer hitch for 1961-62 Pontiac - $3. Whitlock, 838-1591.

FOR SALE: 2.4-inch astronomical and terrestrial telescope with accessories. Pellett, 826-0316.

FOR SALE: Cosco play pen. Miller, 877-3431.

OUTSIDE EMPLOYMENT POLICY

Staff members are reminded that in order to engage in private employment outside NASA, prior approval must be obtained from Center officials.

NASA employees may not engage in outside employment which might reasonably result in a conflict of interest or an apparent conflict of interest between the private interest of the employee and his official Government duties and responsibilities. Employees are not permitted to work for any firm having a contract with Langley Research Center.

In the absence of such conflict, however, NASA employees are entitled to the same rights and privileges as other citizens and there is no general prohibition against NASA employees engaging in outside employment if the employee's performance of his Government job is not adversely affected by the outside work, and the employee's outside employment does not reflect discredit on the Government or NASA.

When requesting permission to engage in outside employment, a request for approval addressed to the Director should be submitted to the Personnel Office, through official channels, containing the following information:

1. Employee's name, title, grade, and salary.
2. Full description of specific duties or servie to be performed.
3. Name and business of person or organization for which the work will be done.
4. Estimated total time that will be devoted to the activity. (If on a continuing basis, the estimated time per year; if not, the anticipated ending time.)
5. Whether service can be performed entirely outside of duty hours; if not, estimated number of hours of absence from work that will be required.
6. Methods or basis of compensation (for example, whether fee basis, per diem, or per annum) and rate or amount of compensation estimated for a specified period.

GOLF TOURNAMENT PLANNED

The Activities Association is sponsoring a Golf Tournament at the Langley Golf Course during the month of March.

Contestants may play as many rounds as they like, An entrance fee of one dollar plus the green fee will be charged for each round.

All play must be in groups of at least three players and all cards must be signed and attested.

Prizes will be gift certificates for merchandise from the Langley Golf Shop.

The prizes will be divided as follows: 25 per cent to the five winners in the blind bogey division; 25 per cent to the five winners with low putts, 25 per cent to the five winners with low scores, and 25 per cent for a hole in one. If no hole in one is made, the money will be divided equally among the prizes in the other three divisions.

For a putt to count, it must be made on the green. Fairway putts will not count.

Plans are also being made to form a golf league. Team captains, members of last year's league and other persons desiring to play in the league are requested to attend an organizational meeting on Wednesday, March 3 at 8 p.m. in the Activities Building.

SUPPORT MANAGEMENT CONTRACT

(Continued from page 1)

tractor to furnish services and materials needed to provide systems management, including systems engineering; logistic support; operational support; test program support; payload coordination; pre-flight planning; date reduction and analysis; standardization of configuration control; reliability and quality assurance; and vehicle modification, checkout and delivery.

It is anticipated that an incentive-type contract will be negotiated.

Scout is a multi-stage launch vehicle using four solid propellant rocket motors capable of carrying payloads of various sizes on orbital, space probe or reentry missions. It can loft a 240-pound satellite into a 300-mile orbit or carry a scientific package approximately 7,000 miles away from the Earth.

The Scout project was initiated in late 1958 to develop an inexpensive, reliable, solid-propellant rocket vehicle for use as a satellite launcher and research vehicle. The first Scout vehicle was launched from Wallops Island in July 1960, and 35 Scouts have been launched to date.

The vehicle is 72 feet long and weighs 20 tons at lift-off. Launching sites are operational on both coasts of the United States for either east-west or polar orbital launches.

Because of its relative economy, reliability and flexibility, Scout is used extensively for small space research payloads by the NASA, the Department of Defense, and for international programs. The vehicle was developed and is managed by the Langley Research Center.

CLUB OF THE MONTH

SEV/RCG - These initials stand for South Eastern Virginia Radio Control Group, the leading organization for radio-control hobby activity in this area. The club is affiliated with the Peninsula Modelers, which also includes the Brainbusters, a free-flight model organization, and the Piston Poppers, a group interested in control-line flying.

The club has 25 active members and meets on the first Tuesday of each month at 8 p.m. in the Activities Building. Club officers are Earl Popp, IRD, president; Hewitt Phillips, Chief of Space Mechanics Division, vice-president; Martin E. Leiss, secretary; Jack Barbour, Mechanical Service, treasurer, and Lt. Col. E. Gene Sprague, USAF, corresponding secretary.

The club holds flying sessions each Sunday afternoon, weather permitting, at the Gun Butt taxi strip on Langley Field.

A biennial meet, the R/C roundup, is held at Langley in July to provide modelers from other areas with an opportunity to fly from the concrete runways and to exchange the latest ideas on design and construction. This meet has been well attended by radio-control enthusiasts from all over the East Coast.

While most of the members build radio-controlled model airplanes, others operate radio-controlled model sailboats, steamboats, and power boats. The club includes in its membership Woody Blanchard, AMPD, five times National Model Plane Champion, and Roy Williams Newport News Shipbuilding and Dry Dock Company, whose super-detailed boat models have won national recognition. Former club president John Worth is now Executive Secretary of the Academy of Model Aeronautics, the national association for model aviation in the United States.

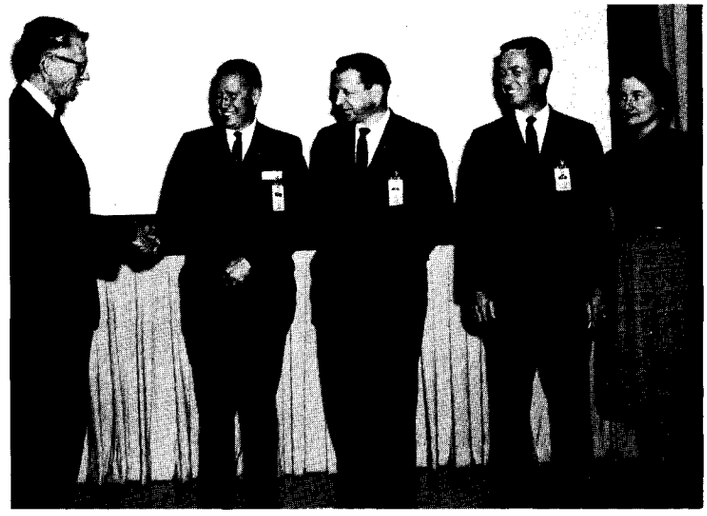
During the winter months, club members have been designing and constructing new models for the summer flying season. These models will be entered in a competition at the next meeting on March 2 with the winners to be decided on the basis of workmanship, finish, and neatness of radio installation.

Radio-control is a fact-growing hobby which satisfies a wide range of interests. Those interested in flying skill and competition can use easily-constructed kit models and reliable, commercially available radio equipment. Others may emphasize the design and building of original models. The more scientifically minded can explore the problems of miniaturized electronic components by developing new and improved control systems.

Starting this hobby, however, does not require a high degree of technical knowledge. The Citizen's Band license to operate radio equipment may be obtained by sending an application to the FCC with no technical examination required.

The sizes of models capable of being controlled range from small flying scale models of 18-inch wingspan and weighing less than 6 ounces to 8-foot span contest models weighing from 5 to 10 pounds. The control system may vary in complexity from a single control on the rudder to complete equipment for controlling rudder, elevators, ailerons, throttle, wheel brakes, and retractable landing gear. Modern developments in radio equipment permit fly-several models simultaneously as a matter of course.

The SEV/RCG extends an invitation to all those interested in radio-control to attend its meetings and flying sessions.



In ceremonies held last week, Dr. Floyd L. Thompson (left), Center Director, presented U.S. Treasury awards of personally engraved medallions to four staff members "in recognition of their achievements in the U.S. Savings Bond Program" at the Center. Receiving the awards are (from left): Edward A. Howe, Chief of Fiscal Division; Henry A. Fedziuk, Chief of Research Reports Division; Jess G. Ross, Head of Awards Program Office, and Ruth A. Verell, Langley Researcher.

FESTIVAL OF HARMONY

The Newport News Chapter of the Society for the Preservation and Encouragement of Barbershop Quartet Singing in America, Inc. (SPEBSQSA), will present its second annual Festival of Harmony on March 13 at Hampton High School.

Headliners this year are the chapter's own 40-man Hampton Roads Chorus and the "Buffalo Bills," International Barbershop Quartet Champions in 1950 and current stars of stage, screen, and television. The "Bills" were the original barbershop quartet in the long-run Broadway production of "Music Man." Also featured will be "Lee's Lieutenants" from Fredericksburg, the "Piedmont Pipers" from Lynchburg, and the "Dixie Dukes" from Newport News.

Curtain time is 8:15 p.m. A limited number of reserved seats as well as general admission tickets are available from the following NASA barbershoppers: Jim Youngblood, John McFall, and Larry Bement, Applied Materials and Physics Division; Milt Cox, Instrument Research; Norman Crabill and Ira Ramsey, Lunar Orbiter Project Office; Bruce Fowler, Structures Research, and Jim Brabrand, Program Schedules and Analysis Unit.

FOR SALE: 1962 Chrysler Newport with all power equipment - $1400, also G3 Glasspar ski boat, 75 hp Mercury engine and trailer - $650. Kuss, PA 2-8898.

FOR SALE: 1960 14-foot aluminum-fiberglas runabout, 35 hp Mercury engine, manual starter, 2 tanks and trailer - $800. Woodman, TW 8-5015.

FOR SALE: Double-neck steel guitar (Rickenbacher), electric guitar (Premier) and large Premier amplifier - $225. Gustafson, 877-0525.

The large number of new models to be displayed at the next meeting should be of interest to all who may be considering radio-control as a hobby.

FEDERAL SERVICE CAMPAIGNS

The annual fund raising campaigns of the National Health Agencies and the Federal Service Joint Crusade is being conducted at the Center through March 15 under the direction of Bruce Amole, Personnel Division.

Employees are being asked to contribute to ten health agencies and four international service agencies. Attendance clerks are requested to collect contributions from members of their groups and to turn them in to division monitors.

The MUSCULAR DYSTROPHY Association is dedicated to the scientific conquest of neuromuscular diseases through research into nerve, muscle and metabolism. Perhaps the most tragic of these diseases is muscular dystrophy which progressively invades and destroys the voluntary muscles. The majority of its victims are young children who rarely reach maturity.

The National Association for MENTAL HEALTH is the only national voluntary membership organization primarily concerned with the fight for the mentally ill and with an over-all attack against mental illness. More than 18,000,000 Americans suffer from some form of mental illness requiring treatment but only a small proportion receive adequate treatment.

The National MULTIPLE SCLEROSIS Society has for its prime purpose research to find the cause and cure of MS which is a neurological disease of unknown origin affecting 500,000 persons in the United States. It attacks young adults from ages 20 to 40, crippling them for life.

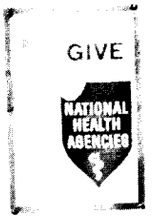
The National Society for CRIPPLED CHILDREN and ADULTS is a nationwide federation of 1,655 affiliates in all 50 states. It operates and cosponsors more than 1,000 centers and programs offering direct care and treatment to over 250,000 children and adults crippled by disease, accident, or at birth. More than 8,500,000 Americans are disabled seriously enough to interfere with work or daily life.

The National CYSTIC FIBROSIS Research Foundation's network of care, research and teaching centers provides diagnostic and treatment services and research facilities seeking the cause and control of cystic fibrosis. This year 4,000 to 5,000 children will be born with this inherited disorder which affects the lungs and digestion. It kills more youngsters than polio in the pre-vaccine era. It rivals cancer as a cause of death up to age 15.

The National Foundation - MARCH OF DIMES has supported research that has produced the Salk and Sabin vaccines against polio, won Nobel prizes for contributing to the world's fundamental scientific knowledge, revolutionized research techniques in the biological sciences, and established and supports the Salk Institute for Biological Studies. March of Dimes provides direct financial assistance to patients with birth defects or polio by paying for hospital bills, orthopedic appliances, home attendant care and nursing services.

The Society for the PREVENTION OF BLINDNESS is committed to a total program for preventing blindness through research, service and education. The Society is constantly promoting eye safety in industry, schools, children's play and among the general public.

United CEREBRAL PALSY centers offer direct services to the victims of cerebral palsy and their families in 50 states. Cerebral palsy is a group of disabling conditions, usually originating in childhood, which are characterized by paralysis, weakness, incoordination or any other abnormality of motor function caused by damaged control centers of the brain.



Thomas L. Lindsay, Coordinator for the Joint Campaigns in the Fiscal Division, was a victim of polio in 1940. Tom stated that he has received much assistance from the March of Dimes including the purchase of his brace. He urged all employees to support the outstanding work of this organization and to have the polio vaccine.

The American CANCER SOCIETY is a voluntary organization of more than 2,000,000 Americans united to conquer cancer. When this is finally accomplished the Society plans to terminate its activities. This is the only national organization fighting cancer through balanced programs of research, education, and service.

The American HEART Association is devoting all its energies to the reduction of premature death and disability caused by diseases of the heart and circulation. Even so, cardiovascular diseases afflict 10,000,000 Americans and cause 54 per cent of all deaths. The Heart Fund fights fights heart disease through programs of research, education and community service.

CARE offers aid to 39 countries on four continents. It gives food to rescue despairing millions from hunger, tools that give them the means to build a new life, and skills of U.S. doctors, surgeons, nurses and technicians through MEDICO, a service of CARE.

The AMERICAN-KOREAN FOUNDATION is helping Koreans help themselves. AKF supports a varied program in the field of health, education, welfare, agriculture and economic development.

RADIO FREE EUROPE broadcasts news, information and entertainment to 80 million captive people in Poland, Hungary, Czechoslovakia, Romania and Bulgaria. These people depend on RFE to answer Communist propaganda and help them resist indoctrination.

PROJECT HOPE offers health opportunity for people everywhere. The teaching-healing hospital ship, the S.S. HOPE, is a symbol of mercy and compassion to hundreds of thousands of people in Indonesia, Viet Nam, Peru, Ecuador and Guinea.

DR. EUGENE [illegible]

Langley Researcher

VOLUME 4, NUMBER 5 LANGLEY RESEARCH CENTER MARCH 12, 1965

DR. THOMPSON TO SPEAK TO AIAA GROUP MARCH 16

Dr. Floyd L. Thompson, Director of the Langley Research Center, will be guest speaker at a meeting of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics on Tuesday, March 16 in the Virginia Room, Hotel Chamberlin.

Dr. Floyd L. Thompson

Dr. Thompson will be introduced by Hampton Mayor Ann Kilgore. His subject will be "Advanced Research and Technology in the Aerospace Program."

The meeting has been designated as "Past Chairmen's Night." Former chairmen of the Hampton Roads Sections of both AIAA and its predecessor the Institute of Aeronautical Sciences will be recognized.

Dr. Thompson joined the Langley staff on July 8, 1926. During the early years of his career, he was an aeronautical engineer in the flight research division, becoming chief of the division in July 1940. Three years later he was promoted to Assistant Chief of Research and from November 1945 to September 1952 was Chief of Research. He was appointed Associate Director in charge of all research at the Center on September 14, 1952, and continued in that capacity until May 23, 1960, when he became Director. In addition to his duties as Langley Director, he serves as Chairman of the NASA Policy Planning Board at NASA Headquarters.

In 1953, Dr. Thompson was cited by his alma mater, the University of Michigan, as a distinguished alumnus- in recognition of his outstanding career in the flight sciences. The University of Michigan honored him again in June 1963 by awarding him the honorary degree of Doctor of Science. The College of William and Mary also awarded him the honorary degree of Doctor of Science in June 1963.

In May 1963, the President of the United Stated presented the NASA Medal for Outstanding Leadership to Dr. Thompson at ceremonies at the White House. He was honored by the NASA "for his outstanding leadership of the scientists and engineers who were responsible for the original technical concepts and who comprised the nucleus of the development team for the space flight missions of the United States in Project Mercury."

He was presented the Distinguished Service Award of the American Legion, Department of Virginia, at the organization's annual convention in Roanoke on July 27, 1963. He

(Continued on page 8)

PRESIDENT PRAISES NASA STAFF DURING HEADQUARTERS VISIT

During a visit to NASA Headquarters on February 25, President Johnson praised NASA employees for their progress in the space effort and declared the true goal of the U.S. space program is to foster peace and bring all the nations of the world together in exploring the universe.

The President told the 230 NASA officials attending the briefing that "the nation and the peoples of the world have a deep debt to you people who selflessly sacrifice so much in order that we might see so far ahead and build for our future."

In recalling his own roll as a senator in getting the space program started he said, "I feel somewhat close to this agency and this program. The Space Act of 1958 was one of the measures that I authored during my 25 years in Congress, and I suspect is one of my proudest legislative achievements. I think it is really incredible that we have come so far. It was only seven years ago this month that we were deliberating and debating and still seeking to come to grips with the realities of the space age.

"I need not recall some of the comments made during that period about the follies that we were about to embark upon. But from that beginning we have moved in these years to realities of accomplishments far beyond our greatest expectations.

"I think a great deal of that is due to the quality and the character and the morale of the people who man the ramparts here in the Space Agency."

During his visit the President received a report on the progress of the Mariner IV spacecraft on its flight towards Mars.

In commenting on the space feats and the purpose of the program he said, "Now I want to say a word about the space feats last week, the continuing Mariner probe, the forthcoming Gemini flight. I think they are indications of the rapid advances that we are making and that we are going, in the name of this country, to continue to make in the exploration of space.

"Our purpose is not, and I think all of you realize never will be, just national prestige. Our purpose remains firmly fixed on the fixed objective of peace. The frontier of space is a frontier that we believe all mankind can and should explore together for peaceful purposes, and I have enunciated that doctrine in all the forums in which I have been allowed to trespass. This has been and is going to continue to be the policy and the purpose of the United Stated Government.

"Administrator Webb reminded me, as I went down the line and met some of your top officials, that more than three-fifths of the nations of the earth have voluntarily joined us in these endeavors. I hold the hope that some day all mankind may be united in this common exploration of the dominion of the stars.

(Continued on page 8)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2375.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

BABY DERBY. . .Weighing in at eight pounds, eleven ounces on February 27 was Allen Stephen, new son of Nancy Pittman, Administrative Services. Ethel Horton, Employment, is the proud grandmother. . .Announcing the arrival of a daughter on February 19 is Ivan Eddie Albertson, Mechanical Service. . .Celebrating the birth of a six pound, nine ounce daughter, Paula Ann, on February 17 is John Dickson, Flight Vehicles and Systems Division.

NOTE OF THANKS. . .Kenneth Ackerly, Plant Maintenance Division, wishes to express his thanks to his many friends for their cards and flowers during his recent illness and for their expressions of sympathy at the time of the death of his brother.

REPRESENTATIVE TO VISIT HERE. . .Beverly Beale, Government-wide Service Plan representative, will be here on Wednesday, March 17 from 2 to 3 p.m. Employees having problems or questions concerning the plan may call Lois Harris, 2323, for an appointment.

FESTIVAL OF HARMONY.. .Interested staff members are reminded that the Newport News Chapter of the Society for the Preservation and Encouragement of Barbershop Quartet Singing in America, Inc. will present its second annual Festival of Harmony at 8:15 tomorrow night at Hampton High School.

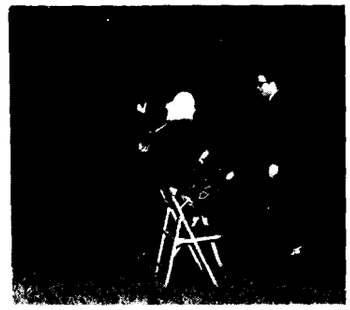
AUTO TAGS. . .Starting March 15, State and Hampton City Auto Licenses may be purchased at the Phoebus Amoco Station located at 201 E. Mellen St., Phoebus. The office will be open Monday through Saturday from 8 a.m. to 6 p.m.

BOATING COURSE. . .A free eight-lesson course in safe boat handling will be given to the public by the U.S. Coast Guard Auxiliary Flotilla 61 at 523 Bridge Street, Hampton. The lessons will be given each Monday and Thursday night starting April 5 at 7:30 p.m. Students will be accepted through April 8. The course is for old boatmen as well as new boat owners and non-owners. A certificate will be awarded upon satisfactory completion of the course. There is no age limit. For further information call R. Beaumont, 826-4039.

FOR SALE: 1/4 acre wooded lot off Maxwell Lane - ideal for split-level home. Darnell, 596-8133.

FOR SALE: 3-bedroom house with fenced backyard - assume payments. Fraser, 722-4927.

FOR SALE: 35mm camera and case - $30. Henderson, 596-3334.



Shown in the left photograph are some of the approximately 25 visitors who viewed the Moon, Jupiter, Mars and some of the stars through six telescopes of various sizes provided by the Skywatchers Astronomy Club last Sunday night at the Activities Building. Right photograph - Leonard Weinstein, club president, demonstrates the 6-inch reflector built by club members.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of March 15:

Monday - French onion soup, beef stroganoff on noodles, baked stuffed pork chops, turkey cutlet, Spanish omelette.

Tuesday - Cream of tomato soup, chicken and dumplings, grilled pork steak, meat loaf, tomato-cheese rarebit on toast.

Wednesday - Split green pea soup, roast leg of lamb with mint jelly, corned brisket of beef, fried fish, chili con carne.

Thursday - Vegetable-beef soup, grilled steak, stuffed shrimp, veal stew, cheese ravioli.

Friday - Clam chowder, shrimp platter, roast beef, broiled fish, baked hash.

The menu for the week of March 22 is as follows:

Monday - Chicken-rice soup, Spanish pot roast, baked ham, fried chicken, grilled cheese sandwich.

Tuesday - Beef-barley broth, sliced turkey with dressing, chuckwagon steak, liver and onions, cheese omelette.

Wednesday - Minestrone soup, braised short ribs of beef on noodles, grilled Canadian bacon with applesauce, stuffed cabbage, tuna-noodle casserole.

Thursday - Vegetable-beef soup, grilled steak, brunswick stew, stuffed flounder, beef ravioli.

Friday - Clam chowder, roast beef, salmon-cheese loaf, fried fish, cheeseburger.

SWISS AWARD DEGREE TO DR. DRYDEN

Dr. Hugh L. Dryden, Deputy Administrator of NASA, has received an Honorary Doctor of Science degree from the Swiss Federal Institute of Technology.

The presentation was made by the Swiss ambassador, Dr. Alfred Zehnder, at the Embassy residence in Washington.

The Zurich Institute awarded the degree in recognition of Dr. Dryden's contribution to science over many years. Internationally known for his leadership in research and development associated with aeronautics and astronautics, Dr. Dryden has been NASA's Deputy Administrator since its inception in 1958, and was Director of Research for its predecessor, the National Advisory Committee for Aeronautics.

FOR SALE: Dr. Locke's lady's blue leather pumps with medium heels, size 9-AAA. Henry, 596-7829.

A group of Center employees were recently presented safe driving awards by T. Melvin Butler, Assistant Director for Administration. In most cases the awards were for a three-year period of safe driving. Shown above are the recipients and their supervisors. Front row (from left) - Thomas Wilson, John Perry, Thomas Diggs, Lloyd W. Harrold, Otha Jackson, and Butler. Back row - Marvin Forrest, Assistant to the Chief of Engineering and Technical Services; F. X. Maher, Head of Transportation Section; James Selby, Frank Mitcher, Joseph Hilton, Edward T. Maher, Chief of Administrative Services Division, and Duane McSmith, Safety Officer. Absent were Charles E. Brown, Robert Davis, Ernest Dennis, Lloyd Fletcher, Thomas Harper, Stanley Shields, and Earl Smoot.

NASA DISTRIBUTES RANGER VII PHOTOS

Close-up photographs of the Moon taken by Ranger VII will receive global distribution by NASA for interpretation by the world's scientific community.

Leading astronomers and other interested scientists in 38 countries will soon receive sets of 199 high-quality Moon photographs taken by Ranger VII's "A" camera. Later, two more sets of photographs taken by the other spacecraft cameras will be distributed. Ultimately, scientists the world over may obtain Ranger photos through the World Data Centers operated under the cognizance of the International Committee on Space Research (COSPAR).

NASA scientists estimated that it would take them many years to evaluate completely the 4,316 photos obtained by Ranger VII before its impact on the Moon last July. With wide domestic and international cooperation they hope to reduce the task materially.

Scientists receiving the sets of photos will be asked to make their interpretations available to NASA before July 1965, when a compilation of the analyses is planned.

The U.S. Embassy in each of 38 countries will make the initial presentation of a number of sets of the Ranger photos to a senior scientific official of the country. This official will then be asked to distribute the sets to specific scientists and institutions.

Additional sets will be provided to the European Space Research Organization, the European Launcher Development Organization, the International Committee on Space Research and the United Nations.

Scientists to receive the Ranger VII data are located in Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, China, Czechoslovakia, Denmark, Finland, France, Germany, Greece, Hungary, India, Ireland, Israel, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Pakistan, Poland, Portugal, Rumania, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, United Arab Republic, United Kingdom, USSR, Vatican City, and Yugoslavia.

LEE JOHNSON RETIRES

Lee E. Johnson, Trades Helper in Research Facilities Service Section D, Mechanical Service Division, retired from the Center on February 26 after serving more than 20 years with the Government.

Johnson was born February 28, 1898 in Newport News. He attended school in Newport News and served in the U.S. Navy from January 25, 1918 to October 13, 1923.

Before joining the staff on December 14, 1949 he worked for the Sprague Steamship Company and the Newport News Shipbuilding and Dry Dock Company.

FOR SALE: 18-foot cabin cruiser with Mark 600 Mercury engine - sleeps 2 - $800. Prillaman, 15 Kingsley Lane.
FOR SALE: 1956 DeSoto, 4-door - $140. Stein, PA 3-2872.

KNOW YOUR CREDIT UNION

The Board of Directors of the Langley Federal Credit Union set the dividend rate for shares on deposit as of December 31, 1964 at 5 percent. This is the fourth consecutive year that this figure has been paid. Remember two things in connection with it - (1) this money, while usually referred to as dividends, is technically interest and reportable as such for income tax purposes, and (2) proceeds are income for the year in which paid, for example, the dividends credited to your account January 19, 1965 are part of 1965's income. Save your January statement and get a jump on next year's hunt for figures.

Experience has demonstrated that members do not realize some of the sober facts relative to co-signing of notes. It should be realized that any one co-maker can be held responsible for the full amount of the note whether or not there are additional co-makers. Neither does the order in which co-makers' names appear on the note have a bearing on order or degree of responsibility.

Sometimes co-signing a note cannot be avoided - a relative or close friend faces a crisis that cannot be resolved in any other manner. Sometimes there is a choice. The important thing is that a co-signer realizes that in signing a note he is making himself liable for the full amount in case of default. As a rule of thumb, except in cases where there is no choice, no loan should be guaranteed if the payment of it will cause a noticeable hardship.

Statistically it has been shown that co-signing one-time emergency loans is less risky than the signing of large loans to consolidate long standing debts.

FLY-THE-FLAG CONTEST: Close but no cigar. Member 6299 had a "decal" but had not gotten around to putting it on her automobile. The prize is now worth $40. It takes less effort to qualify than it will to grin if you get a call but can't accept the check.

SYVERTSON HEADS NASA DIVISION

Clarence A. Syvertson, veteran of 17 years in theoretical and wind tunnel research, has been named Director of the new Mission Analysis Division of NASA's Office of Advanced Research and Technology.

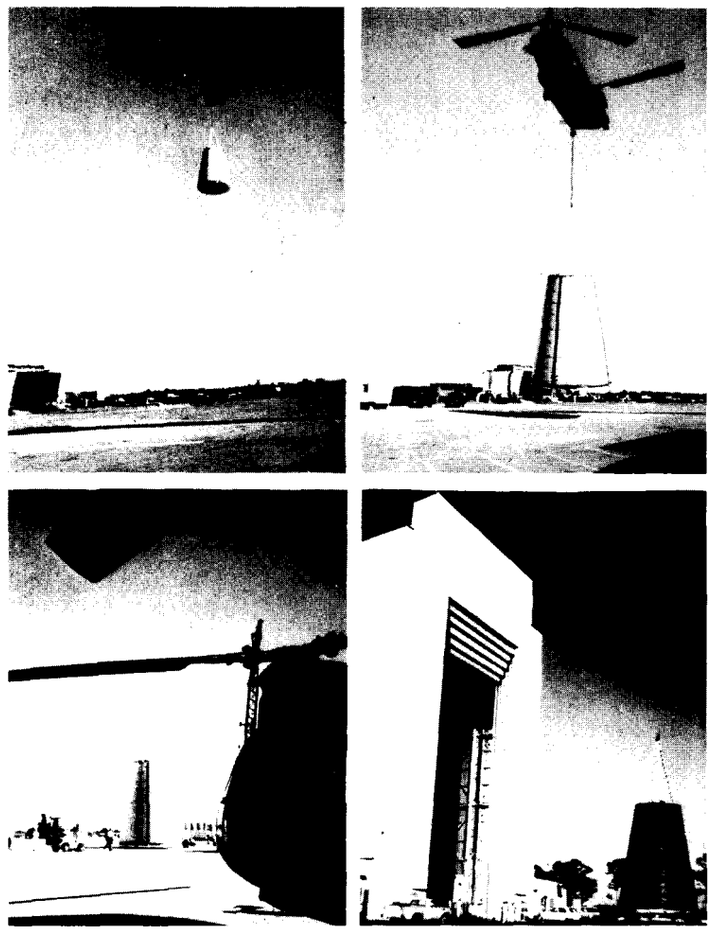
In his new position he will be responsible for the study of future missions for the research and technology programs.

The division, an integral part of the NASA Office, is located at the Ames Research Center and will draw administrative support from that center. Its nucleus is the Ames Mission Analysis Division, which Syvertson has headed since 1964.

Purpose of locating at Ames is to isolate the division staff from the day-to-day problems of the Headquarters environment, and to provide ready access to modern laboratory facilities and computing equipment. Syvertson will report to Dr. Raymond L. Bisplinghoff, Associate Administrator for Advanced Research and Technology.

Although the initial staff of the division will be drawn from Ames, it is planned to bring in members with a wide range of specialties from other field centers of NASA. Most employees in the division will serve tours of duty ranging up to three years. The division will be organized along aeronautical and space mission lines.

Syvertson has been engaged in research at Ames since 1948, when he joined the staff as an aeronautical engineer.



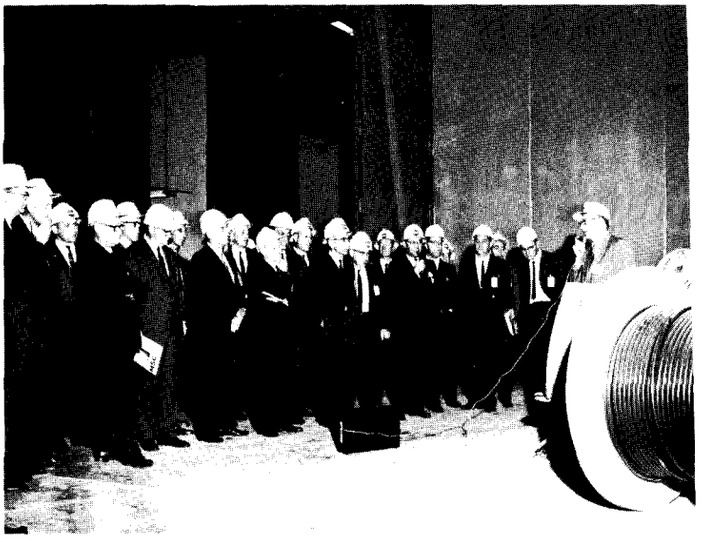
A SWINGING CARGO-Weighing 3,500 pounds and standing almost 30 feet high, the space-age device in these photos is too ponderous for conventional air travel. This giant Army helicopter was required for the shipment from the North American Aviation plant in Tulsa, Oklahoma, to Cape Kennedy. The cargo that traveled the 1,000 miles slung under the helicopter is a cone-shaped adapter which connects the instrument unit in a Saturn 1B launch vehicle with the Apollo lunar spacecraft. The massive bundle is shown making its descent and being trundled away at Cape Kennedy.

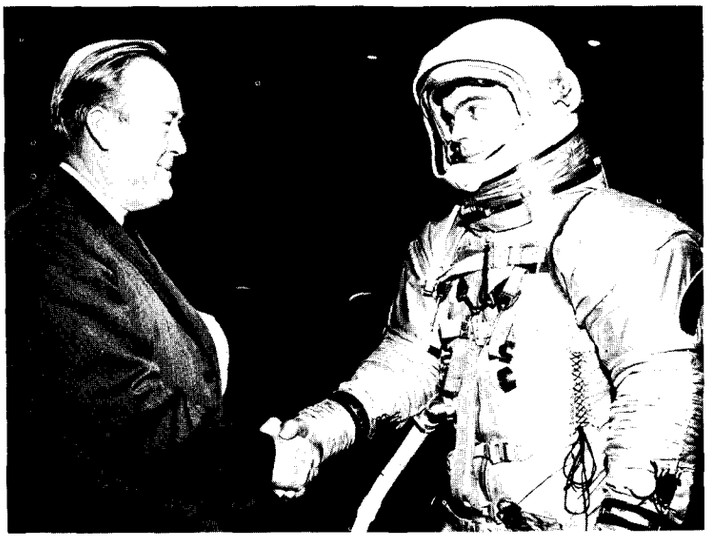
He specialized in wind tunnel design and operation, rising to the position of Chief of the Ames 3.5-foot hypersonic wind tunnel in 1959. Since 1964, he has been acting assistant director for Research and Development Analysis and Planning.

Early in his career Syvertson developed a method for design of variable Mach-number supersonic tunnels and originated theories for hypersonic flows which are widely used in assessing stability of rockets and missiles in flight.

He was one of a group studying high lift-drag ratios at hypersonic speeds, which influenced the design of the XB-70. He has headed a group coordinating wind tunnel tests of the M-2 lifting body concept. In 1957 he received the Lawrence Sperry Award for his hypersonic research work. He has written numerous technical reports.

Born in Minneapolis in 1926, he earned the degree of bachelor of aeronautical engineering in 1946 and his M.S. degree in 1948, both from the University of Minnesota. He is a member of Tau Beta Pi and the American Institute of Aeronautics and Astronautics.





A group of key employees from the Langley Research Center recently attended a Senior Management Indoctrination at Manned Spacecraft Center. Left photograph - The Langley group listens to a lecture in the Centrifuge Building during their tour of the space center. Right photograph - Axel T. Mattson (left), Langley representative at MSC, meets Randolph H. Hester, Apollo Support Office, Crew Systems Division. Members of the Langley group included: Charles J. Donlan, Eugene C. Draley, Dr. John E. Duberg, F. B. Smith, P. F. Korycinski, T. A. Harris, Mattson, J. V. Becker, H. A. Wilson, I. E. Garrick. John Campbell, M. R. Nichols, J. E. Stitt, W. H. Phillips, R. R. Heldenfels, P. J. Crain, E. C. Kilgore, R. N. Conway, P. F. Fuhrmeister, and Dr. Samuel Katzoff.

LANGLEY TO NEGOTIATE WITH PHILCO FOR PENETROMETER STUDY CONTRACT

NASA has selected Philco Corporation, Aeronutronic Division, Newport Beach, California, for negotiations leading to a contract for research, development and preliminary design of a lunar penetrometer system applicable to the Apollo program.

Penetrometer is a technical name given to an instrumented package capable of assessing the hardness, penetrability and bearing strength of a surface upon which it falls. Penetrometers ejected from an Apollo spacecraft orbiting the Moon could furnish lunar surface information for scientific assessment of remote sites which may be inacessible to manned spacecraft or unmanned Earth-launched probes.

The nine-month study is estimated to cost approximately $1 million. A contract will be nagotiated and managed by the Langley Research Center under direction of NASA's Office of Manned Space Flight.

The study will require the contractor to develop and test penetrometers and data transmission equipment needed to relay lunar surface information to an orbiting Apollo spacecraft. It does not call for production of flight hardware but is to establish definitive data to form a basis for decisions on whether or not an engineering prototype or flight hardware should be built.

This type of lunar surface probe is one of several systems under study by the Office of Manned Space Flight in support of NASA's over-all lunar exploration program.

Philco was one of seven firms which responded to a request for proposals issued by the Langley Center.

GLENN NAMED CONSULTANT

John H. Glenn Jr. was sworn in recently as a consultant to the NASA by NASA Administrator James E. Webb.

Glenn, who retired from the Marine Corps in January, will work with Administrator Webb in various aspects of NASA programs as his time and interest allow, including participation in conferences, appearances both in the United States and overseas, and following up on developments underway.

One of Glenn's first tasks for NASA will be to attend the quarterly meeting of the Aerospace Research Applications Center at the University of Indiana, Bloomington, April 8.

ARAC was established at the university in 1962 under a NASA contract to accelerate transfer results to industry of the space agency's research and development effort. The university uses a computer to store data and make it available to some 35 midwest companies which have subscribed to the program.

Glenn was the first American to orbit the Earth. His flight of three orbits in Friendship 7 took place February 20, 1962. He left the NASA manned space flight program in January 1964 to seek the Democratic nomination for United States senator from Ohio. Injuries received in a fall caused him to withdraw from the campaign in the spring of 1964.

WANTED: Driving combination from Deer Park area to W.A. on 8 shift. R. M. Jones, 3331.

WANTED: Gibson guitar. Newcomb, CH 4-5057.

WANTED: Ride to Connecticut or New York City any weekend before Easter. Meyers, 2338.

WANTED: Driving combination or ride from Macon Homes to W.A. on 7:30 shift. Whitehead, 4861.

WANTED: Ride from Warwick Gardens to W.A. on 7 shift. Harvath, 3358.

WANTED: Exakta camera and equipment. Christian, PA 2-8306.

WANTED: Alternate driver from Norfolk to W.A. on 7:30 shift. Hudgins, 4851 or Norfolk 587-9023.

WANTED: Ride from Anne Dr., Swansea Manor, to W.A. on 8 shift. Reed, 3313.

WANTED: Ride or driving combination from Hurst Drive, Holly Homes, to E.A. on 8 shift. Drew, 2365.

THE MEN AND THE SPACECRAFT - This is the astronaut team for NASA's up-coming GT-3 mission, the third flight in Project Gemini and the first manned flight of the series. Scheduled to fly GT-3, a three-orbit mission, are Virgil I. Grissom and John W. Young. Their backups, or alternates, are Walter M. Schirra Jr. and Thomas P. Stafford. Launch of GT-3 from Cape Kennedy is scheduled for spring. The spacecraft recovery area is Grand Turk Island, Bahamas.

APOLLO CONFERENCE PLANNED

NASA has announced more than 130 foreign scientists and space organizations in 24 countries have been invited to a conference to aid them in proposing biomedical experiments on U.S. manned space flights.

The conference, to be held at the Manned Spacecraft Center on April 22 and 23, will be devoted to a briefing of the Gemini and Apollo missions as they relate to the definition and design of appropriate biomedical experiments.

Both of NASA's manned flight programs, Projects Gemini and Apollo, have been opened to proposed experiments by the world scientific community. Proposals will be considered on the basis of their scientific merit in competition with other proposals.

The conference will be under the direction of Dr. W. Randolph Lovelace II, Director of Space Medicine for NASA.

Letters of invitation have been sent by NASA's Office of International Affairs to 113 scientists and 23 national space organizations overseas.

WANTED: Alternate driver from Warwick Villa to E.A. on 7 shift. Harvey, 2318.

EMPLOYEES DONATE BLOOD

The Red Cross Bloodmobile visited the Center recently and staff members donated a total of 144 pints of blood - this was 31 pints below the quota.

Melvin M. Carmel and Joseph Daniels completed their quota for three gallons. Reaching the two-gallon mark were Marvin Leffel, Oren Jones, James Matthews, and Henry Kyle. One-gallon pins were presented to Eugene Bunting, Raymond Midden, Bordie Poole, and John Wilson.

There is a continual need for new blood donors. Center employees may register to take part in the program by completing the application below and returning it to the East Dispensary, Mail Stop 330.

NAME_____ MAIL STOP_____
SECTION_____ TELEPHONE NO._____

FOR SALE: 1962 10 x 55-foot Gibraltar trailer, 3 bedrooms. Grant, Gloucester OX 3-6174.

FOR SALE: Yorkshire Terrier puppies. Guess, Portsmouth EX 9-7271.

FOR SALE: 15-foot Fiberglas boat with convertible top, 18 hp motor - will sell separate. Hunt, 868-5602.

IEEE TO HEAR WILLIAM BROWN

William C. Brown

William C. Brown, Manager, Super Power Operations, Raytheon Company, will address the Hampton Roads Section of the Institute of Electrical and Electronic Engineers at its meeting on March 17. His subject will be "Microwave Power Transmission and Its Applications."

The meeting will be held at the Shore Drive Inn on Pleasure House Road and Shore Dr., Virginia Beach. A social hour will start at 6:30 p.m., followed by dinner at 7:30 and the meeting at 8:30. The menu will be a choice of ham steak or seafood at $4 per plate. For reservations call Cary R. Spitzer, 3446, or Frank Senft, 3461, by noon on March 16.

Brown's paper will be devoted to a discussion of the technology of microwave power transmission and to its aerospace applications. The state-of-the-art of the three basic component areas of microwave power generation, microwave beam formation, and microwave power rectification will be reviewed. The first microwave powered helicopter experiments will be described and a projection of aerospace applications based on an analysis of technological and economic factors involved will be made.

Brown is a Fellow of the IEEE. He received his B.S. degree in Electrical Engineering in 1937 from Iowa State College and his M.S. degree in 1941 from Massachusetts Institute of Technology. As manager of the Super Power Operation he supervised the team that built, under an Air Force contract, a helicopter that was continuously held aloft by beam of microwave power. Brown was author or co-author of three articles on microwave power engineering in the October 1964 IEEE Spectrum.

NASA BOWLING LEAGUES

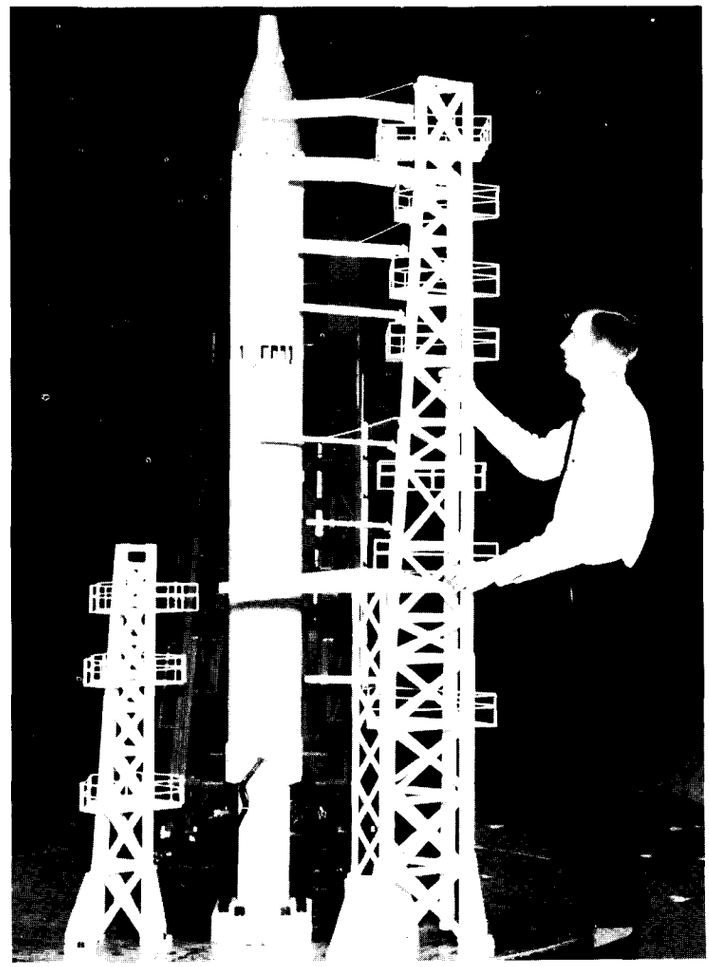
Mexican Restaurant continued to lead Group A in the NASA Tenpin League with 55 wins and 33 losses but Phantoms and Flyers are trailing close behind. Top scores were rolled by Dale Rodman with a 231 game and 625 set.

Odd Balls lead in Group B with 54.2 wins and 33.5 losses. Ivy Farms Shell is in second place with 50 wins and 38 losses. Top bowlers for the week were Harold Crane with a 272 game and Carl Gentry with a 658 set.

Barristers lead in Group C with 64 wins and 32 losses but Analogs trail in second by only a one-game margin. Top scoring honors went to John Messenheimer with a 241 game, Warren Kelliher with a 663 set, and Peggy Mayo with a 243 game and 660 set.

Light Machine Shop No. 1 continues to lead the NASA Duckpin League with 60 wins and 36 losses. Top scores were rolled by Ray Gentry with a 150 game and 395 set, Mary Carmines with a 116 game and 319 set and Mary Lou Wood with a 115 game and 319 set.

FOR SALE: Lounge chair and three antique lamps - two are matched pair and one is a bisque figure. Miller, 595-0731.



When Robert H. Goddard launched the world's first liquid-fueled rocket at Auburn, Mass., on March 16, 1926-- he paved the way for manned space flight and the exploration of space. One of the modern-day projects which is a stepping stone to Apollo manned lunar landings is Gemini-- a model of which is shown undergoing research in Langley's Transonic Dynamics Tunnel. Ground wind investigations form an indispensable part of the painstaking research program that lies behind successful flights of launch vehicles of all sizes, and Langley has specialized in such wind tunnel studies for many years. Here, in a cooperative program with the Manned Spacecraft Center, is an aeroelastically scaled model of the Titan-Gemini launch vehicle and erector tower. It is mounted on a turntable with the umbilical tower so that it can be rotated to receive the force of the wind stream from any direction. Wind studies are required to predict accurately the effects of the ground wind loads on the vehicle and erector structure. Surface winds cause oscillatory deflections of free-standing launch vehicles which must be thoroughly understood to solve problems of structural strength, guidance alignment and instrument checkout. President Johnson has issued a proclamation designating Tuesday as Goddard Day in commemoration of the flight of Dr. Goddard's early rocket-- which traveled 184 feet in 2.5 seconds. The President's proclamation states that "this achievement as well as Dr. Goddard's other pioneering achievements in the theory, construction, and testing of rockets, established a foundation for the development of modern rocketry and made possible the exploration of space."

JOHNSON PRAISES NASA STAFF

(Continued from page 1)

"I was rather surprised yesterday to see the great acceptance of the communications satellite by other nations. We know as the space age develops that it becomes increasingly clear that space technology will serve us in most practical ways. It will improve the quality of life on earth for all humans, regardless of their national origins or their races or their religions."

In continuing his praise of NASA employees the President declared, "The job that all of you have done deserves the greatest praise, and as your President, I want, on behalf of all the people of America, to express it this morning.

"You serve freedom and you serve peace and you serve progress. You have served them richly and well. We are proud of you, we are grateful to you, and in the years to come we will come to rely on your devotion and your dedication to duty, and I think you are an example for all the rest of our government and for public servants everywhere."

NASA GOLF TOURNAMENT

Center golfers are reminded that the Activities Association is sponsoring a Golf Tournament at the Langley Golf Course during the month of March.

Contestants may play as many rounds as they like. An entrance fee of one dollar plus the green fee will be charg- for each round.

All play must be in groups of at least three players and all cards must be signed and attested.

Prizes will be gift certificates for merchandise from the Langley Golf Shop.

The prizes will be divided as follows: 25 per cent to the five winners in the blind bogey division; 25 per cent to the five winners with low putts, 25 per cent to the five winners with low scores, and 25 per cent for a hole in one. If no hole in one is made, the money will be divided equally among the prizes in the other three divisions.

A meeting of the NASA Golf League will be held at 7:30 p.m. on March 16 at the Activities Building. League officers will be elected and schedules will be set up for the 1965 season. Anyone wishing to enter a team in the league or anyone who wishes to join a team should attend the meeting.

AIAA TO HEAR THOMPSON

(Continued from page 1)

was cited by the Legion for his outstanding service as an engineer and research director and for his active participation in community affairs.

Dr. Thompson was selected for recognition as "Distinguished Virginian" for 1963 in the field of aeronautics and space by the Virginia State Exchange Clubs. The award was presented at the annual spring meeting of the Virginia State Exchange Clubs in Richmond in March 1964.

The meeting will be preceded by a social hour at 6 p.m. followed by a roast turkey dinner at 7 and the meeting at 8. Reservations may be made by calling L. W. Enderson, 596-6702, Harleth Wiley, LY 6-4427, or Bill Michael, LY 5-0463, by noon on March 15.

FOR SALE: 2 Community Concert series tickets for the Houston Symphony Orchestra on March 14. Oertel, Williamsburg 229-6842.

An avid supporter of the American Heart Association and its research program is Dorothy Moore, Time, Leave and Payroll Supervisor in the Fiscal Division. Dorothy had major heart surgery at the Medical College of Virginia in February 1964 and she has been back at work on a full time basis for several months. The Center's Joint Fund Raising Campaign for the National Health Agencies and the Federal Service Joint Crusade ends today.

FEDERAL SERVICE CAMPAIGNS

The Center's Joint Fund Raising Campaign for the National Health Agencies and the Federal Service Joint Crusade ends today.

Bruce Amole, chairman of the drive, urged that employees give their contributions to the attendance clerks who in turn will send them to the division monitors.

Included in the campaign are ten health agencies and four crusade agencies.

The health agencies include Muscular Dystrophy Associations of America (March Against Time), National Association for Mental Health, National Multiple Sclerosis Society, National Society for Crippled Children and Adults (Easter Seals), National Cystic Fibrosis Research Foundation, National Foundation - March of Dimes, National Society for the Prevention of Blindness, United Cerebral Palsy Associations, American Cancer Society, and American Heart Association (Heart Fund).

The crusade agencies include American-Korean Foundation, CARE, Radio Free Europe, and Project Hope.

The campaign is conducted annually in compliance with an Executive Order establishing rules and regulations on Federal fund-raising.

NOTICE: The following items are now available for issue from the General Stockroom, Building 1195: Ribbons for IBM Selectric Typewriters, 7510-R19-0085 Film, (carbon), No. 3121; 7510-823-8075 Nylon, black, Twin-Pak and 7510-823-8074 Nylon, black/red, Twin-Pak.

WANTED: Driving combination from Todds Lane to E.A. on 8 shift. Gilliland, 2354 or 826-2068.

WANTED: Fifth driver from Tide Mill Farms or Riverdale Apartments to W.A. on 8 shift. Marcum, 4705.

WANTED: Ride from Warwick Gardens to E.A. on 8 shift. Anne Overbay, 2313.

DR. EUGENE M. EMME
APPH

Langley Researcher

VOLUME 4, NUMBER 5 LANGLEY RESEARCH CENTER MARCH 26, 1965

MISSION SAFETY SEVENTY PLANNED

A 30 percent cut in the injury rate for Federal employees by 1970 is the goal set by National Safety Council Chairman Nelson M. Bortz.

The five-year safety-improvement drive among Federal workers has been labeled "Mission Safety Seventy" to dramatize the objective of reducing employees' injury frequency to 70 percent of the 1963 rate by 1970.

With injuries 3.4 percent higher than in 1962, fatalities up to 40 percent, and costs and severity up 13 percent, the chairman declared that critics could claim there has been no real safety progress among the Federal work force since 1948. That year, he said, the frequency rate was 8.1 injuries per million man-hours. Today it is 7.9. Meanwhile, costs have risen steadily from $9.1 million in 1948 to a record high of $37.6 million in 1963.

In backing the "Mission Safety Seventy," President Johnson issued the following statement:

"We open another front in our War on Waste -- waste of human resources, productive skills and money.

"Secretary of Labor W. Willard Wirtz has alerted me that the incidence of injury to Federal civilian employees is no better today than it was ten years ago and direct costs to the Government have risen nearly 50 percent.

"In the last seven years alone, over 1,200 workers have lost their lives through job injuries in the civilian service of the United States.

"Nearly 300,000 disabling injuries have been sustained by Federal employees.

"Over 18,500,000 man-days of potential production have been lost.

"Direct costs to the Government in compensation and medical care approached a quarter of a billion dollars.

"Indirect costs of property damage, replacements, and other factors are estimated as being four times as great, making the total cost at least $1-1/4 billion.

"This is inexcusable waste because --

"NEARLY ALL OF THESE DEATHS AND INJURIES ARE PREVENTABLE.

"As a first step in reducing these needless tragedies and this waste, I am launching Mission SAFETY-70.

"Under this Mission I am directing the Federal Departments and Agencies to reduce their injury frequency 30 percent by 1970.

"Attainment of this goal would prevent about 45,000 injuries and save us almost a quarter of a billion dollars of direct and indirect costs.

"Every life is precious and each must be safeguarded; -- success in this first step would save approximately 200 lives.

"I have twice presented President's Safety Awards to those Departments and Agencies which have markedly improved their safety performance. So I know some Federal agencies have already enlisted in this War on Waste.

"A 30 percent reduction in the frequency of Federal work

(Continued on page 8)

LANGLEY SELECTS GOODYEAR TO MAKE FIVE PAGEOS CONTAINER ASSEMBLIES

NASA has selected Goodyear Aerospace Corporation, Akron, Ohio, for negotiations leading to a contract for constructing five cannister assemblies to be used for launching an Echo-type satellite called PAGEOS into orbit in 1966.

PAGOES is one of three types of spacecraft in the United States geodetic satellite program. Langley Research Center manages PAGEOS under NASA's Office of Space Science and Applications. The name is formed from the title Passive Geodetic Earth Orbiting Satellite.

The PAGEOS satellite will be a 100-foot inflatable sphere, much like Echo 1 which has been in orbit since August 12, 1960. It will not use the radio tracking beacons which Echo 1 carries.

It will be launched into a near-polar orbit from the Western Test Range, by a Thrust-Augmented Thor Agena-D (TAT-Agena-D) launch vehicle.

The spherical metal cannisters which Goodyear will build will house the folded balloon during the launch phases of flight. When orbital conditions are attained, the cannister will separate into two hemispheres, allowing PAGEOS to deploy and inflate into a 100-foot sphere.

PAGEOS is intended to orbit at an altitude of 2,300 miles.

(Continued on page 8)

Astronauts Virgil I. Grissom (left) and John W. Young made space flight history Tuesday by skillfully maneuvering their spacecraft during its three orbits of the earth. This was the first United States two-man space flight in a Gemini spacecraft. The two astronauts and their "Molly Brown" vehicle were launched atop Titan II at 9:24 a.m., Tuesday, March 23 from Cape Kennedy.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2375.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGEMENTS. . .Making plans for a May 1 wedding is Mary Suzanne Cavanaugh, Lunar Orbiter Project Office. She is engaged to Melvin A. Lofurno, Hampton. . . A Center romance reached the engagement stage when Julia Lane Wright and James Arthur Cockrane, both of Dynamic Loads Division, announced their plans to wed in June. . .Making plans to desert the bachelor ranks is Aaron Joel Ostroff, Scout Project Office. He is engaged to Gloria Spivak, Newport News, and plans call for a September 5 wedding. . .Dan Cupid scored a victory when Alice Grace Farrior, Aero-Physics Division, became engaged to Paul Carraway Butler Jr., Portsmouth. The big event will take place in August.

COURSE OFFERED. . .A ten-week course about the world in which we live will be taught one evening each week at Hampton High School. The lecture series, which will start after April 15, acquaints the student with facts about our planet and helps to discover order and beauty in nature around us. Interested persons may register at Hampton High School on Monday and Thursday nights.

EUROPEAN TOUR PLANNED

The NASA Employees Association's Ninth Annual 30 day Tour of Europe will leave New York Kennedy International Airport for London on Monday, August 30 and return from Paris on Tuesday, September 28.

The all-expense tour price is $940 per person. All NASA employees, spouses, dependent children and parents are eligible. The tour will cover the following countries: England, Holland, Germany, Switzerland, Liechtenstein, Italy, Austria, Monaco and France.

The tour price is based on the current group jet airfare of a minimum of 25 travelling together. A few seats will be held for those wishing to take the air transportation only at $356 per person.

There are many special features included in the land tour price - a welcome party and buffet dinner at a London "pub," a theatre party in London, the Folies Bergeres in Paris, a steamer trip up the Rhine, a visit to the fishing village of Volendam in Holland, and an exciting evening in Monte Carlo.

Persons planning to go on the tour need a valid passport (allow two weeks) and a smallpox vaccination within the past three years certified by the local Board of Health.

A deposit of $100 is required with reservations. Application forms are available at the Langley Researcher Office, Room 218, Building 587.

FOR SALE: 1958 Jaguar, Model XK-150. Senn, PA 3-0566.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of March 29:

Monday - Puree of bean soup, chicken and dumplings, breaded veal steak, Polish sausage, Austrian ravioli.

Tuesday - Chicken-rice soup, lobster tail, half-pound chopped steak, boiled ham, fried chicken, hot dog.

Wednesday - Tomato-barley soup, Spanish pot roast, baked stuffed pork chops, liver and onions, cheese ravioli.

Thursday - French onion soup, grilled steak, fried shrimp, meat loaf, tamale pie.

Friday - Clam chowder, roast beef, broiled fish, fried fish, chili con carne.

The menu for the week of April 5 is as follows:

Monday - Vegetable-beef soup, baked Virginia ham, braised beef tips on noodles, fried chicken livers, grilled spiced luncheon meat.

Tuesday - Green split pea soup, Swiss steak, grilled ham slice, shrimp, fish cakes.

Wednesday - Beef broth with barley, roast beef, breaded veal cutlet, beef stew, tuna-noodle casserole.

Thursday - Chicken-noodle soup, grilled steak, spaghetti with meat sauce, fried chicken, baked hash.

Friday - Clam chowder, half-dozen fried oysters, corned brisket of beef, broiled fish, cheese omelette.

FOR SALE: 1961 Thunderbird, air conditioned, power accessories - $2,095. Yates, CH 4-4106 after 4:30.

FOR SALE: House in Bellview Terrace - $13,000, $450 down. Miller, PA 3-0925.

FOR SALE: 18 hp Johnson outboard motor. Hudgins, Hayes 642-2501.

RED CROSS BLOOD PROGRAM

The Bloodmobile visits to the Center is a part of the Red Cross Blood Program which was established to make whole blood and blood derivatives available to physicians so that they may provide blood therapy to patients. The Red Cross provides approximately 50 percent of all the blood used by physicians and hospitals. By agreement with the Department of Defense, the Red Cross is prepared to coordinate expansion of the program at a time of national crisis to meet the needs of the armed forces and civil defense.

A network of 56 regional centers, with widely ranging mobile units, gives residents of cities and rural areas alike the opportunity to participate in the Blood Program as donors and volunteer workers. The blood donations obtained provide physicians and hospitals with blood and blood products. Participating hospitals total more than 4,200.

The Blood Program is extended to new communities by affiliation with an existing center or by the establishment of a new one where there is a need and the community supports the Red Cross efforts. A 57th regional center is now being planned for Chicago.

A regional blood program is usually financed as a joint effort by the Red Cross and the participating hospitals, which assist in meeting the costs of collection, processing, and distribution. All blood is given by voluntary donors, and no charge is ever made for the blood or the blood products themselves.

Today's Blood Program is not limited to civilians. Military and veterans hospitals receive blood and derivatives and servicemen make a sizable contribution as donors.

Continuous research is a vital factor in the Blood Program. Identification of new and useful blood fractions, long-term preservation of whole blood, and obtaining new automated blood-typing equipment are among the projects currently under investigation. All whole blood not transfused is used to prepare clinically valuable blood fractions. Among those fractions supplied to physicians across the United States are gamma globulin, serum albumin, vaccinia immune globulin, and fibrinogen.

In 1963-64 a total of 2,737,000 units of whole blood was collected from volunteer donors with the following distribution: units to hospitals as whole blood - 2,181,000; units to hospitals as frozen plasma - 45,900; units to hospitals as packed red cells - 37,700; units of whole blood remaining for fractionation and for special purposes - 510,100 - from these remaining units the following derivatives were produced: units of serum albumin (100 ml.) - 85,550; units of fibrinogen (2 gm.) - 4,400; units of gamma globulin (ml.) - 1,377,750, and units of vaccinia immune globulin (ml.) - 1,700.

There is a continual need for new blood donors. Center employees may register to take part in the program by completing the application below and returning it to the East Dispensary, Mail Stop 330.

NAME_____ MAIL STOP_____
SECTION_____ TELEPHONE NO._____

WANTED: Driving combination from Bowditch Ford on Harpersville Rd. to W.A. on 7 shift. Hubbard, 4422.

FOR SALE: 1964 Ford Falcon van with camping equipment. Thomas, LY 6-7041.

WANTED: Alternate driver from Beechmont Gardens, Denbigh, to W.A. on 8 shift. Parker, 4702.

A negotiated agreement between Langley Research Center and NASA Langley Lodge 892 was signed at Langley recently. Shown above are members of the Union Negotiating Committee and Langley management representatives. Seated at the table are (from left): T. Melvin Butler, Assistant Director for Administration; Viggo Dereng, Heavy Machine Shop; John M. Moore, Light Machine Shop; Albert W. Bainbridge, Instrument Construction Shop; Dr. Floyd L. Thompson, Langley Director; Desford D. Smith, Grand Lodge Representative from International Association of Machinists; Louis H. Griffin, Light Machine Shop; Frank K. Gough Jr., Instrument Construction Shop, and Dalma C. Johnson, Heavy Machine Shop. Members of the Langley Management Negotiating Committee (standing) are: William B. Mayo, Chief of Mechanical Service Division; Joyce M. Anthony, Personnel Division Secretary, and Charles F. Barnett, Personnel Officer and Chief of Personnel Division.

CONTRACT BETWEEN CENTER AND LODGE 892 APPROVED

A negotiated agreement between Langley Research Center and NASA Langley Lodge 892, International Association of Machinists (AFL-CIO), was signed at Langley on December 11, 1964 and approved by the NASA Administrator on March 10.

Langley's dealings with Lodge 892 culminating in this agreement have spanned better than a year. This agreement and the exclusive recognition accorded Lodge 892, both of which were made possible by Executive Order 10988, apply to a craft unit at this center consisting of all employees working at the machinist trade including apprentices, helpers and tool crib attendants assigned to the Heavy Machine Shop, Light Machine Shop, and Instrument Construction Shop Sections.

Executive Order 10988 issued guidelines to cover dealings between Government agencies and bona fide employee groups and organizations. It provides employees with the right to join or refrain from joining bona fide employee organizations and Government agencies are cautioned not to interfere with these rights of employees. In addition, after employees have organized and clearly manifested their wish to deal collectively with management, the Executive Order provides that the attitude of management should be one of affirmative willingness to enter such relations.

Lucy Bainbridge (center), Head of Stenographic and Report Typing Section, Administrative Services Division, was recently honored by members of her division for completing forty years of service at the Center. Members of the group are (from left): Tut Huffman, Elizabeth Reed, Marian Ryan, Edna Davidson, Bessie Stokley (seated at desk), Barbara Buchanan, Eloise McGehee, Edward T. Maher, Chief of the Administrative Services Division, Roxie Haight, Sallie Harvey, Irene Sherrill, Ruth Hart, Linda Dyer, and Doris Yates. Lucy joined the Center staff on February 24, 1925.

TWO CONSULTANTS NAMED

An internationally known scientist in the field of aeronautics and astronautics and a former senior foreign service officer have been sworn in as consultants to NASA.

NASA Administrator James E. Webb administered the oath to Dr. C. Stark Draper, who heads the Department of Aeronautics and Astronautics at Massachusetts Institute of Technology; and to Theodore C. Achilles, a former ambassador to Peru and presently vice-chairman of the executive committee of the Atlantic Council of the United States. The Atlantic Council is a non-profit organization for creating better understanding among nations of the Atlantic community.

Webb said Draper, recipient of a number of scientific awards and honors and designer of the guidance system for NASA's Apollo Moon-landing project, will be a technical consultant on a part-time basis, and Achilles will be available for consultation on NASA's university program.

BUTTEN RETIRES FROM CENTER

Clifton H. Butten, Metal Modelmaker in the Heavy Machine Shop, Mechanical Service Division, retired from the Center on March 12 after serving almost 24 years with the Government.

Butten was born February 9, 1903 in Mystic, Connecticut. He served in the U.S. Army from October 1921 to October 1922 and worked six years for the Watertown Arsenal, Watertown, Massachusetts. He joined the Center staff on December 27, 1948

NASA SOFTBALL LEAGUE

An organizational meeting of the NASA Softball League will be held in the Activities Building on March 31 at 4:30 p.m. All teams planning to enter the league must have a representative present. For further information call F. A. Kern, 4691.

LANGLEY HOST TO REGIONAL YOUTH SCIENCE CONGRESS

Seventeen high school science students from six southern states, including five from Virginia, participated in a regional Youth Science Congress conducted at the Langley Research Center this month by the National Science Teachers Association in cooperation with the NASA.

Written reports prepared by the 17 students on science projects which they carried out at their respective schools were declared best in their region and won them the right to present the papers at the Youth Science Congress at the Langley Center in competition to select the three top technical documents.

The three finalists selected by a panel of judges were: Aubrey Strode Jr., a student at Liberty High School in Bedford, Va., presented his winning paper on "Experimental Magnetohydrodynamic Power Generator;" Joan M. Keene, Bethlehem High School in Bardstown, Ky., gave a paper on "The Influence of Different Dietary Carbohydrate Sources and Penicillin or Arsanilic Acid on Chick Performance," and Morris Summers, Terry Parker High School in Jacksonville, Fla., presented his winning paper on "The Polyphenol Oxidase System of a Decapod Crustacean."

The students were in Region III of the eight-region National Youth Science Congress, including Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, the Canal Zone, and Puerto Rico. The three winners will be eligible to attend the National Youth Science Congress to be held later this year in Washington, D.C., where their papers will be judged along with 21 winners of the seven other regional contests in the United States.

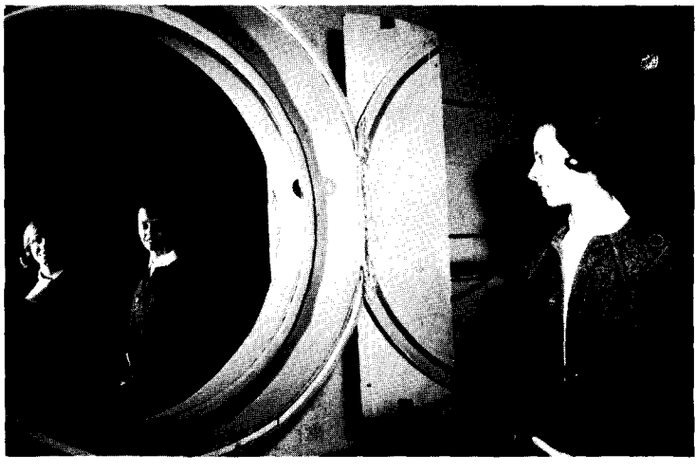
The five Virginia students included two from the Tidewater area-- Robert J. Pariser of Norfolk Academy and Douglas Brenner of Churchland High School. Other Virginians were Joe Laughon Jr. and Aubrey Strode Jr., both of Liberty High School in Bedford, and William P. Pala Jr., of the George C. Marshall High School in Falls Church.

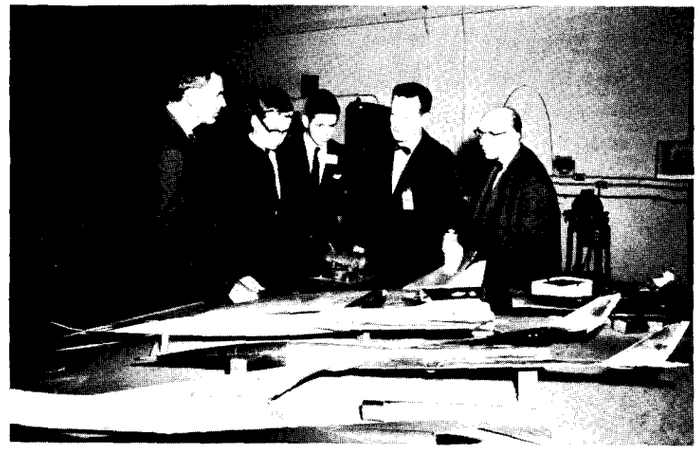
North Carolina was represented by two students-- Charles B. Beasley of Grainger High School in Kinston and Noel Dunivant Jr. of Whiteville High School.

Other state representatives included: Georgia-- Edward H. Shelander Jr. of Glynn Academy in Brunswick and Michael C. Yaksh of Dykes High School in Atlanta; Florida-- Larry C. Debb and Charles W. Jernigan, both of Leon High School, Tallahassee; Stephan Kolitz, Morris Summers, and Charles G. Ward, all three of Terry Parker High School, Jacksonville; Kentucky-- Mary L. Fields and Joan M. Keene, both of Bethlehem High School, Bardstown; and South Carolina-- Joseph B. Walters Jr., A. C. Flora High School, Columbia.

Judges of the papers which were presented orally by the respective authors were Dr. Samuel Katzoff, Research Assistant in the Office of Langley's Associate Director; Dr. George F. Pezdirtz, head of Spacecraft Materials Section in Applied Materials and Physics Division, and Franklin D. Kizer of Richmond, State Supervisor of Science, State Department of Education.

In the organization of the NSTA-NASA Youth Science Congress, the United States is divided into eight geographic regions and all high school students in grades 10, 11, and 12 are eligible to participate.





Seventeen high school science students from six southern states participated in a regional Youth Science Congress conducted at the Center this month by the National Science Teachers Association in cooperation with NASA. Shown in the top left photograph are the contestants. Right top photograph - One of the three finalists selected at Langley was Aubrey Strode Jr., Liberty High School in Bedford, Virginia. Center left photograph - Joan M. Keene (left), also one of the three finalist, is shown with Mary L. Fields, Both are from Bethlehem High School, Bardstown, Kentucky. Center right photograph - Morris Summers (second from left), also presented a winning paper. He is shown in the Unitary Wind Tunnel with (from left): Ted Davenport, Director of Youth Activities, National Science Teachers Association, Washington, D.C., Charles G. Ward, M. Leroy Spearman, Head of Large Supersonic Tunnel Branch, and Myrl H. Ahrendt, Educational Program Officer at NASA Headquarters. Both Summers and Ward are students at Terry Parker High School, Jacksonville, Florida. Lower left photograph - The students watch a demonstration on the Langley Reduced Gravity Simulator by Randell L. Harris. Explaining the demonstration is Donald E. Hewes, Head of the Spacecraft Research Branch. Lower right photograph - Charles J. Donlan, Langley's Associate Director, talks to the group of students during a luncheon which was held in the West Area private dining room.

NASA POLICIES EXPLAINED

1. Employees may not have any outside activities or interests which may interfere or conflict with the performance of their duties or might reasonably be expected to result in a conflict of interest which would tend to prevent them from exercising impartial judgment on behalf of NASA.

2. Employees may not have any outside activities which may tend to result in discredit or embarrassment to NASA.

3. Employees may not have any outside activities or interests which may appear to involve unethical capitalization of their official positions or of information or resources to which they have access by reason of their employment by the Government.

4. Employees may not receive any salary from non-governmental sources for their service to the Government.

5. Employees may not receive gratuities from or become obligated to any one with whom they may have official relationships or who may be affected by their performance of duty.

6. Employees must disqualify themselves from handling or attempting to influence in any way any matter which affects chiefly any private person or organization (a) with whom they have a substantial economic interest, or (b) with whom they have arranged or are negotiating for subsequent employment or business relations, except by prior written authorization.

7. Employees may not divulge any restricted information to any unauthorized person; release any information in advance of the time prescribed for its authorized issuance; or make use of, or permit others to make use of, any information for private purposes on a basis of advantage not available to the general public.

8. Employees may buy stocks and bonds for bona fide investment purposes providing they do not buy or sell such securities as a result of or on the basis of information derived from their official position or from the official position of other NASA employees with whom they associate.

9. Employees may not utilize Government time or resources except for official business or NASA approved or sponsored activities.

10. Employees may not represent any non-governmental interest in any matter which involves any case or matter about which they have acquired knowledge, or have taken, or may take action, in connection with their official duties.

11. Employees may not do indirectly (by, through, or with other persons) what they may not do directly under the foregoing rules.

Questions regarding these policies should be directed to the Personnel Officer.

FOR SALE: 1959 BelAir Chevrolet, 4-door sedan, new engine installed last fall - $595. Verser, 217 Pine Grove Rd.

FOR SALE: Admiral 17,500 btu, 220 volt window air conditioner - $175, Sears 11,000 but, 110 volt window air conditioner - $60. Teischman, 596-4562.

FOR SALE: 1964 Chevrolet super sports with 4-speed transmission. Wilmoth, 595-2583.

FOR SALE: 40 pieces of Franciscan Ivy dishes. Clem, PA 2-2146.

AUCTION: A 1960 Dodge Matador (9-passenger station wagon), recently repossessed and driven down from New York, will be auctioned off at the main office of the Credit Union (Building 1227) on Tuesday, March 30 at 12:30 p.m.

KNOW YOUR CREDIT UNION

A contract to demolish its present building necessitates the relocation of the main office of the Langley Federal Credit Union on or about March 29. Unfortunately, a split operation will result until such time as the Credit Union's own permanent quarters become available later this summer.

Tellers and loan personnel will be located in the north side of the Gate House, NASA Main Gate, while administrative and accounting personnel will occupy the second floor, west end of Building 1192. Most members will be primarily interested in the Gate House operation. Limited parking will be available and every effort made to reduce any unavoidable inconvenience to a minimum. Telephone numbers will remain the same: NASA 4607 and 2604.

It is strongly recommended, during this interim period, that maximum use be made of the telephone in applying for a loan and of the mail in making payments or deposits to shares. In the latter case, an initial letter stating clearly the action desired is all that is necessary. A receipt will be returned along with the necessary vouchers, return envelope, etc., to transact future business quickly and easily.

FLY-THE-FLAG CONTEST: Again there is a winner. Emilie Coe, Applied Materials and Physics Division, received a check for $60 and so brought the contest to a close. Congratulations to Emilie who has been a Credit Union member since 1954. Remember there will be another contest this fall, so keep those "flags" flying.

PENTAGON OFFICE ESTABLISHED

NASA has established an Office of Industry Affairs at the Pentagon by arrangement with the Assistant Secretary of Defense (Installations and Logistics).

Clyde Bothmer, formerly director of management operations in NASA's Office of Manned Space Flight, heads the office. The office will coordinate DOD-NASA mutual interest matters in the areas of procurement and contract management, including quality assurance.

The office was set up as an extension of NASA's Headquarters Office of Industry Affairs to maintain closer liaison with the new Defense Supply Contract Administration (Project 60) as well as the continuing support of the three military services in connection with all phases of contract management.

NASA TENPIN TOURNAMENT

The NASA Tenpin Bowling Tournament held March 9 and 16 provided a break in the regular season and contributed added enthusiasm to bowling. The tournament was held at Hidenwood Fairlanes Alleys and bowled on the regular league nights. Two Tuesday nights were required to complete the bowling. March 9 was set aside for team bowling and 23 teams participated. Singles and doubles were bowled on the following Tuesday night in which 83 persons entered the singles and there were 46 doubles entries.

The team event was won by Devious with a set of 2960. The winning members were John Mulqueen, Jim Henry, Robert Gungle, Bill Wilson and Dick Kurtz. High scratch set for the tournament was 611 rolled by John Mulqueen during the team event and included a 223 game. Guy Kilburn, Alley Cats, bowled high game of the team event with 243 and spurred his team into second place. In addition to Guy, the Alley Cats were supported by Max Williams, Glenn McKenzie, Jerry Miertschin and Dick Hanna. High woman bowler during the team event was Peggy Mayo, Dillys, with a 213 game and a 526 scratch set.

Ralph Parks and Robert Forrest were victorious in the doubles rolling a 1254 set. The doubles team coming in second was Pat and Joe Poslik with a 1234. Joe and Pat bowled well in this event as Joe posted a 225 game and Pat came in with a 502 scratch set. A 253 was high game in the doubles contest posted by Gerald Sisson. This also was the high individual game of the tournament. Other notable games bowled in the doubles event were George Palko 225, Roy Henley 235, and Troy Brooks 222.

In the singles event Ken White walked off with top honors rolling a 587 scratch with an 81 pin handicap for a 668. Bill Weaver was second with a 568 scratch and 652 handicap. George threw a 221 game in this event. The high game in singles was 241 by T. Whiteman and this was third high individual game for the tournament. Other games worth mentioning were Sidney Hall and Roy Henley with 223 each.

All events honors were captured by George Palko who compiled an 1863. George threw handicap sets of 608 team event, 608 doubles event and placed third in singles with a 647. Ladies' honors were taken by Marie Henley who rolled a 1690. Marie posted handicap sets of 527 team, 594 doubles and 569 singles.

Special recognition should be given to the tournament director, Will Watson, and his assistants, Henry Lee and Bill Wood. Will put in many hours to make this tournament the success it was. Bob Rhinehart, trophy committee chairman, did a wonderful job obtaining some beautiful trophies for the tournament.

AETNA SETS CLAIMS DEADLINE

Aetna, the indemnity benefit program, has placed a time limit on filing of claims. The plan will not accept a claim submitted later than December 31 of the calendar year following the one in which the expense for which claim is being made was incurred except where the enrollee was legally incapable.

Under Aetna's time limit, for example, an employee who has incurred hospital and medical expenses in February 1964 has until December 31, 1965 to file his claim.

FOR SALE: Colonial maple dining set - 40 x 60-inch table. Ulrich, 838-0561.

In the NASA Tenpin Bowling Tournament, Devious took first place and Alley Cats came in second. Top photograph- Members of the Devious team are (from left): Bill Wilson, Jim Henry, Dick Kurtz, John Mulqueen, and Robert Gungle. Center photograph - Members of the second place Alley Cats are: Max Williams, Glenn McKenzie, Dick Hanna, Guy Kilburn, and Jerry Miertschin. Bottom photography- Will Watkins (left) was Tournament Director and he was assisted by Henry Lee. Photographs by Sidney Hall

LANGLEY SCIENTIST REPORTS REENTRY BLACKOUT RESULTS TO IEEE

Several methods are now available to relieve the communications blackout problem which has plagued space vehicles during atmosphere entry, a NASA scientist reported this week at the national convention of the Institute of Electrical and Electronics Engineers in New York.

Theo E. Sims, who manages the Langley Center's Project RAM(Radio Attenuation Measurements), suggested that vehicle shape selection, signal frequency choice, use of static magnetic fields, and material addition to the flow field are all possible solutions to the reentry communications problem.

He said significant progress has been made toward understanding the fundamental nature of the blackout problem, which arises when gas surrounding an entering vehicle ionizes because of intense heating. The ionized gas becomes electrically conducting, and prevents normal passage of radio signals from the spacecraft.

Since the blackout problem is most severe with very blunt spacecraft, sharp nosed designs may offer some promise of alleviating the difficulty, although for many missions the heating problem dictates a blunt shape. Transmitting the signal at an extremely high frequency may be another solution, Sims pointed out, although there are attendant difficulties with equipment availability.

A magnetic field generated near a spacecraft antenna has been shown to be a useful way of providing a "window" through which radio signals may be transmitted, particularly at higher altitudes and with slender spacecraft. The development of very light weight superconducting magnets may extend the method to blunt spacecraft, the scientist believes.

The fourth approach offering promise, Sims suggested, consists of spraying some material, such as water, into the hot gas envelope surrounding a reentry spacecraft. Flight experiments, he indicated, have shown the materials addition technique to be useful at speeds up to 12,000 mph.

Sims reported that the RAM Project which he heads has completed its flight research at speeds up to 14,000 miles per hour and plans are being made for orbital flight experiments as well as those typical of lunar return velocities. The flight program is coupled with an intensive effort in laboratories and in theoretical studies, and the results obtained thus far provide a vehicle designer with several workable solutions to the blackout problem.

FOR SALE: 7.60 x 14 tubless tire mounted on wheel. Timmons, 826-3645.

FOR SALE: Winchester 12 gauge shot gun, single shot - $22, Champion 410 gauge shot gun, single shot, box of shells and shell belt - $27. Hoell, 722-5978.

FOR SALE: 1957 Chevrolet hardtop, 4-door. Tate, PA36422.

FOR SALE: Small Roto-tiller - $40. Schutz, 596-9474.

FOR SALE: 1964 MG Midget convertible. Russell, LY63708.

FOR RENT: 2-bedroom house near Wythe Shopping Center. Morris, CH-76842.

FOR SALE: 8,000 btu Fedders air conditioner, 115 volts. Tompkins, 826-0371.

FOR SALE: 1960 Volkswagon station wagon with 1962 engine - $995. Copeland, 898-5643, Yorktown.

FOR RENT: Six-room house in Hampton, $80 per month. Powell, CH 4-7240.

CALENDAR OF EVENTS

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		MARCH 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	MAY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 6-Foot Tunnel Dinner-Party	2 IRD Dinner-Party	3
4	5 Department Meeting	6 Bridge Club Model Club	7	8 Payday Game Night	9	10 Civil Service Exam
11 PALM SUNDAY	12	13 Bridge Club	14	15 ASME Dinner-Party	16 GOOD FRIDAY	17 EASTER EGG HUNT
18 EASTER	19 Civil Service Exam	20 Bridge Club Model Club	21 Bloodmobile	22 PAYDAY Game Night	23 Supervisors Club	24
25	26	27 Bridge Club	28	29	30	

1965 APRIL 1965

LANGLEY SELECTS GOODYEAR

(Continued from page 1)

As it reflects the sunlight falling upon it, it will act as a shining point source of light in the sky.

By means of triangulation, a geometric technique, two or more camera stations, 2,500 to 2,800 miles apart, will simultaneously photograph the satellite against a star background. The photographs will yield information to locate any point on Earth, as measured from the center of mass, to within 32 feet of its true position. The distance between two surface points 2,000 miles apart could be calculated with the same accuracy.

The geodetic program employing PAGEOS is expected to last five years, during which the necessary measurements can be made over the entire surface of the globe.

Under the fixed price incentive contract to be negotiated, Goodyear will design, fabricate and test five cannister assemblies, two of which will be used for ground test purposes. The cannisters will be machined from magnesium alloy forgings and will be 26-1/2 inches in diameter inside.

Complete ground testing and handling support will be provided by the contractor, whose personnel will also assist in connecting the cannister assembly to the launch vehicle.

The 100-foot PAGEOS satellites are being procured by the Langley Research Center under a separate contract.

MISSION SAFETY SEVENTY

(Continued from page 1)

injuries is attainable. One-half of all our employees now work in Agencies whose injury frequently matches the goal which I have set for the Government as a whole. It is time for the Agencies with higher-than-average rates to effect significant reductions and for all other Agencies to improve further their present performance. No one can relax in the pursuit of safety."

The overall NASA frequency rate in 1963 was 2.7. This means that to conform to the goal of Mission Safety 70 the rate should be reduced to 1.9 in 1970.

The Langley rate in 1963 was 1.29 which gives the Center the goal of .9 for 1970. This is not unrealistic because in the years of 1957-58-59-60 the Center's rate was below 1.0.

The frequency rate is the number of disabling injuries per million man-hours worked.

WANTED: Girl to share apartment. Schmidt, CH 4-6755.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 4, NUMBER 7 | LANGLEY RESEARCH CENTER | APRIL 9, 1965

FIRMS NAMED FOR RAMJET PROJECT BEING DIRECTED BY LANGLEY CENTER

NASA has selected three aerospace firms to develop a concept and prepare preliminary designs for a hypersonic ramjet research engine. The work is the opening phase of NASA's Hypersonic Ramjet Experiment Project announced last June.

Chosen to make the parallel studies were: The Garrett Corporation, Los Angeles, California; General Electric Company, Cincinnati, Ohio; and The Marquardt Corporation, Van Nuys, California. Negotiations to determine final contract terms and costs will begin immediately. Total value of this phase of the contract will be about $1.5 million.

Each company will conduct a detailed study of advanced ramjet engine technology to define the best possible ramjet research engine and to develop a preliminary design for a research flight engine.

During the nine-month course of the contracts, each company will prepare engine development plans for the second phase of the program, and these plans will be considered as technical proposals for further work on the project.

The Hypersonic Ramjet Experiment Project is one of the programs of the Aeronautics Division of NASA's Office of

(Continued on page 4)

At a recent meeting of the Equal Employment Opportunity Committee, members are shown as they review the Center's Affirmative Action Program. The committee serves in an advisory capacity to the Personnel Division and Center management officials and seeks to explore realistic approaches to accomplishment of the objectives of the Affirmative Action Program. Seated are (from left): Katherine G. Johnson, Lawrence W. Brown, and J. Norwood Evans, Employment Officer. Standing (from left): John J. Cox, secretary, and Edward T. Maher, chairman. Absent when the photograph was taken was Vernon S. Courtney.

CENTER MAKING NASA AWARDS AT 17 STUDENT SCIENCE FAIRS

Langley Research Center is presenting awards this spring in 17 regional and state science fairs in Virginia, North Carolina, South Carolina, and Kentucky as part of the annual participation of NASA in the National Science Fair-International.

Up to five certificates of outstanding achievement in aeronautics and space-related categories are being awarded by NASA in the senior high school competition, including four regional science fairs at Hampton, Roanoke, Arlington and Fairfax.

NASA awards are being presented by Langley at science fairs at Chapel Hill and Charlotte, North Carolina; Florence, Orangeburg, Aiken, Columbia and Spartanburg, South Carolina; and Campbellsville, Williamsburg, Jeffersontown, Morehead, Elizabethtown and Lexington, Kentucky.

Six Langley scientists served as judges in the Tidewater Science Congress April 3 at the Kecoughtan High School in Hampton. Four of them-- John F. Ward, Robert A. Babcock III, Gerald D. Walberg and Gerald L. Pellett-- represented the Langley Center in the selection of NASA award winners.

These four, along with two other Langley scientists-- Richard B. Hays and Griffin Y. Anderson, also served as judges for the regular Tidewater Science Congress awards. In this capacity, the six judges represented the Hampton Roads Section of the American Institute of Aeronautics and Astronautics.

Robert O. Schade, Langley scientist and chairman of the educational committee of the local AIAA, is representing Langley as judge in the NASA competition today at the North Carolina State Science Fair at Chapel Hill, North Carolina. Another Langley scientist, John F. Ward, recently selected NASA award winners at the South Piedmont District Science Fair at Charlotte, North Carolina.

Langley's participation in the 17 science fairs is being coordinated by Joel K. Zoeffel, Office of Public Affairs. Other NASA centers are taking part in science fairs in their geographic areas.

At St. Louis, Missouri, May 5-8, winners of regional and state science fairs in the United States and Canada affiliated with the National Science Fair-International will compete for national honors. NASA awards at St. Louis will include certificates of merit to six student winners in aerospace categories and an invitation to them to visit a NASA research center selected on the basis of the interests of the individual winners. Each student will be permitted to select a teacher to accompany him on the NASA tour.

Axel T. Mattson, Langley's Research Specialist for Manned Spacecraft Projects, has been named for the third successive year as a judge for the NASA awards program at the National Science Fair-International.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2375.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

WEDDING BELLS. . .Sue Houser, Personnel Division, took her final vows with Capt. Alan Reynolds Kidd Jr., Highland Park, Illinois, last Saturday at the Langley Air Force Main Chapel. Joyce Anthony, Personnel, was a bridesmaid and Doris Mae Phillips, also of Personnel, served as mistress of ceremonies.

NEW HEIR. . .Weighing in at seven pounds, three ounces on March 27 was Gary Charlton, son of Barbara, formerly of Aero-Physics Division, and James Cubbage, Aero-Physics Division.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on April 13 from 3 p.m. until 4 p.m. Mrs. Beverly Beale, Government-wide Service Plan representative, will be here on April 21 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Harris, 2523, for an appointment.

ENGAGEMENTS. . .Making plans to desert the bachelor ranks is Garl Gentry, Full-Scale Research Division. He is engaged to Patricia Nelson, Yorktown, and the wedding will take place on June 26. . .Dan Cupid scored another victory when David R. Mason, Mechanical Service Division, became engaged to Jewel Mae Winn, Hampton. Plans call for a June wedding. . .Carolyn Anne DeAlba, Flight Mechanics and Technology Division, has announced her engagement to Joseph Henry Schaffer, Newport News. The big event will take place on June 12.

SKYWATCHERS . . .The Skywatchers Astronomy Club will meet on April 16 at 7:30 p.m. in the Activities Building. Guest speaker will be Dr. Goetz Oertel, Aero-Physics Division. All interested persons are invited to attend.

BLOODMOBILE. . .The Red Cross Bloodmobile will visit the Center on April 21. Additional donors are needed to help meet the Center's quota. Those who have not registered to donate blood and wish to do so may call East Dispensary, telephone 2243.

GOLF TOURNAMENT. . .The NASA Golf Tournament which was being held at the Langley Golf Course during the month of March was been extended through the month of April because of the rainy weather experienced last month. Contestants may play as many rounds as they like. An entrance fee of one dollar plus the green fee will be charged for each round.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of April 12:

Monday - Cream of tomato soup, Spanish pot roast, deep fried turkey cutlet, stuffed pepper, macaroni and cheese.

Tuesday - Puree of bean soup, braised short ribs, grilled pork chops, fried fish, tamale pie.

Wednesday - Vegetable-beef soup, grilled steak, baked meat pie, fried chicken, franks and beans,

Thursday - French onion soup, roast ribs of beef, chicken shortcake, stuffed flounder, barbecued sandwich.

Friday - Clam chowder, country style chopped steak, baked ham, broiled fish, fish sandwich.

The menu for the week of April 19 is as follows:

Monday - Beef broth with barley, corned brisket of beef, fried fan tail shrimp, smoked pork sausage, baked hash.

Tuesday - Chicken-vegetable soup, roast beef, barbecued spare ribs, chicken chow mein, Spanish omelette.

Wednesday - Tomato-barley soup, sliced turkey with dressing, chuckwagon steak, liver and onions, chili con carne.

Thursday - Consomme Julienne, grilled steak, roast fresh ham, fried chicken, cheese ravioli.

Friday - Clam chowder, Spanish pot roast, broiled fish, fried fish, knockwurst, cheeseburger.

WANTED: Two girls to share apartment. Carolyn Grantham, 2331.

WANTED: Passengers from Newmarket-Forest Park area to W.A. on 7:30 shift. King, 4691.

FOR SALE: Three Wilson woods - Nos. 1, 3, 4, almost new - $45. See Rayle, Langley Golf Course.

FOR RENT: 3-bedroom brick rancher with attached garage and air conditioning, located in Hallwood - $115 per month. Sinclair, CH 7-5018.

EMPLOYEE CONDUCT ON THE JOB

The manner in which an employee conducts himself on the job is frequently relevant to the proper, economical, and efficient accomplishment of his official duties and responsibilities. In addition, those employees who are in direct contact with the public play a most significant role in determining the public's attitude toward the Federal service, both by the manner in which they serve the public and the way in which they conduct themselves generally in the view of the public.

Employees are expected during duty hours consistently to apply themselves to the duties of their positions and to give full value in services rendered to NASA and the public. Idleness, wasting time, or failure to be at work on assigned tasks will not be tolerated. Instructions of supervisors must be carried out promptly or within established deadlines insofar as possible.

Employees may not use Federal property of any kind for other than officially approved activities. They also have a positive responsibility to protect and conserve all Federal property, including equipment and supplies, which is entrusted or issued to them.

Generally speaking, employees of the Federal Government are expected not only to be efficient, but also to conduct themselves in a manner which will reflect favorably on their employer. Although the Government does not want to circumscribe the private lives of its employees, it does expect them to be honest, reliable, trustworthy, and of good character and reputation. They are expected to be loyal to the Government and to NASA.

HARVEY NEW CONSULTANT

Dr. Mose L. Harvey, director of the University of Miami Center for Advanced International Studies and professor of History, has been sworn in as part-time consultant to NASA.

A consultant also to the United States State Department's Policy Planning Council, Harvey will serve NASA in the area of international affairs.

He is a veteran of State Department service in the U.S. and overseas, having served as deputy chief of mission and counselor of Embassy in Helsinki, Finland (1957-59) and as deputy and acting U.S. Representative to the International Atomic Energy Agency in Vienna, Austria (1959-61).

Harvey, 54, is a native of Friendship, Georgia, and a Phi Beta Kappa, magna cum laude graduate of Emory University, Atlanta, where he also received a master's degree. He received his doctorate in 1938 with highest distinction from the University of California.

EASTER EGG HUNT APRIL 17

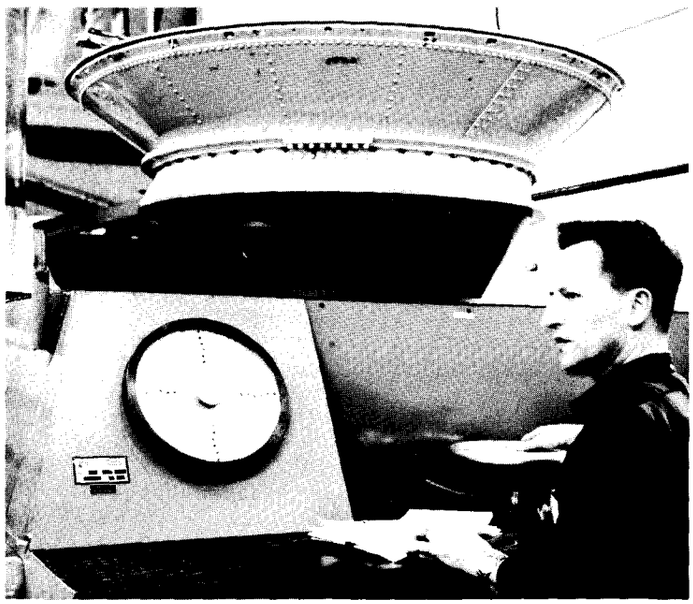
The Activities Association's Annual Easter Egg Hunt for children of Center employees will be held on Saturday, April 17 at 1:30 p.m. in the Activities area.

The annual event is free for NASA children. Two areas will be marked off - one for the smaller children and one for the larger children.

Parents are requested to stay out of the hunting vicinity and let the children have the pleasure of finding the eggs.

The hunt will continue until the supply of eggs has been exhausted.

FOR SALE: 3-bedroom rancher with separate dining room and family room located in Riverside. Earl, 877-9104.



Final preparations are now underway at the John F. Kennedy Space Center for the Project Fire launch scheduled for the second quarter of the present calendar year. Ray Holloway Jr., Mechanical Service Division, is shown at KSC making adjustments during the checkout of a dynamic balancing machine which was recently moved from Langley Center and erected at KSC to support Project Fire. Precise balancing of the Project Fire spacecraft, which will be spun during flight at a rate of about three revolutions per second, is essential to the success of the mission. The 4,200-pound spacecraft, consisting of the velocity package, Antares II rocket motor, adapter, and reentry package, will be assembled at KSC and the Langley machine will be used to provide the required on-site balancing capability.

PROFESSORS TO VISIT HERE

Dr. James B. Eades, Head of the Department of Aerospace Engineering, Virginia Polytechnic Institute, will visit the Center on Thursday, April 15 to discuss their graduate program in Aerospace Engineering.

Dr. John W. Cell, Head of the Department of Mathematics, North Carolina State College, will visit the Center on Friday, April 16 to discuss their graduate program in Mathematics.

Accompanying Dr. Cell will be Dr. Ian N. Sneddon, Professor of Mathematics at the University of Glasgow. Dr. Sneddon, who is serving as a visiting lecturer at N.C. State, will give a lecture at 1:30 p.m. in the East Projection Room. His subject will be "Integral Transform Methods and Applications to Engineering Problems."

Dr. Thomas L. Reynolds and Dr. Sydney H. Lawrence, members of the Mathematics Department at the College of William and Mary, will also be at the Center on April 16 to discuss alterations in the departmental requirements for a M.A. degree in Mathematics.

Persons interested in attending the lecture by Dr. Sneddon or in conferring with any of the above professors are requested to call the Training Office, 2547.

FOUND: Slide rule near West Gate. Robertson, 3349.

WANTED: Ride to New York City or Conn. any week-end before May. Meyers, 2538.

NASA BOWLING LEAGUE

Mexicali Restaurant and Flyers are tied for first place in Group A of the NASA Tenpin League with 67 wins and 37 losses each. Phantoms trail in third by only a one-game margin. Top bowlers for the week were Ed O'Sullivan with a 234 game and John Campbell with a 591 set.

Odd Balls lead in Group B with 61.5 wins and 42.5 losses. Ivy Farms Shell trails in second by only a half game. David Vann took top bowling honors with a 281 game and 704 set.

Barristers lead Group C with 71 wins and 33 losses. Top scores were rolled by Moses Farmer with a 242 game, Aubrey Fitzgerald with a 242 game and 629 set, Irene McLain with a 229 game and Jane Oehman with a 580 set.

GROUP A

Mexicali	67	37	Electronic Shop	52	52
Flyers	67	37	Short Circuits	45	59
Phantoms	66	38	Hornets	43	61
Alley Cats	63	41	Payloads	41	63
Unitary	55	49	Devious	40	64
Frame Ups	55	49	Raiders	30	74

GROUP B			GROUP C		
Odd Balls	61.5	42.5	Barristers	71	33
Ivy Farms	61	43	Analogs	67	37
Misfits	60.5	43.5	Question Marks	65	39
Beats Me	60	44	Dillys	59	45
Ranch House	58.5	45.5	Greenhorns	58	46
Cee Pees	56.5	47.5	ACD	56.5	47.5
Ten Benders	55.5	48.5	Alley Oops	56	48
A-OK's	54.5	49.5	Strike Outs	49	55
Pinwigglers	54	50	Gliders	48	56
Galaxies	50	54	Dopesticks	47.5	56.5
Flight Eng.	48	56	Spare Parts	43	61
HMS	44	60	Bowling Belles	39	65
Malfunctions	32	72	Lunar Tics	37.5	66.5
Spare Oops	30	74	Mets	31.5	72.5

Light Machine Shop No. 1 leads the NASA Duckpin League with 72 wins and 40 losses. Light Machine No. 2 is in second place with 58 wins and 54 losses. Top scores this week were rolled by Bill Suit with a 135 game, John Dupere with a 360 set, Mary Lou Wood with a 118 game and Anne Overbay with a 118 game and 332 set.

Lt. Mach. 1	72	40	Rebel Bombers	57	55
Lt. Mach. 2	58	54	Tigers	51	61
Ten Spots	57	55	Strike Outs	41	71

WANTED: One alternate driver from Norfolk to W.A. on 8 shift. Childs, 4481.

WANTED: Ride from Beechwood to W.A. on 8 shift. Thompkins, 4891.

WANTED: Ride or driving combination from Rogers Ave. to W.A. on 8 shift. Rose, 3421.

WANTED: Ride or driving combination from Colonial Court in Grafton to W.A. on 8 shift. Goering, 4826.

WANTED: Ride from Saunders Rd. to W.A. on 8 shift. Reed, 3313.

WANTED: Driving combination from Ivy Farms to W.A. on 8 shift. Kelsey, 3241.

FOR SALE: Two adjoining wooded waterfront lots on Currituck Sound, Kitty Hawk, N.C. - 60 feet beach front and 285 feet deep - $1475 each. Getzinger, 723-1981.

FOR SALE: Four pieces of "Blossom Time" silver by International. Hudgins, 245-9676.

NINE SHOPS LAUNCH MISSION SAFETY 70

Dr. Floyd L. Thompson, Director, recently presented Shop Safety Awards to the Heavy and Light Machine Shops, Instrument Construction Shop, Modelmaking Branch, Electronic Shop and the four Electrical Shops of Electrical Systems Division.

These shops qualified for awards as a result of having no lost-time accidents last calendar year. The excellent safety records accumulated by these shops have helped the Center launch its Mission Safety-70 Program, which is President Johnson's plan to reduce the Federal injury frequency rate and costs 30 per cent by 1970.

Dr. Thompson asks all staff members to support the Center's accident prevention program by performing their work in a manner which will eliminate the possibility of accidents. He stated, "Expediency in accomplishing a task should never be of such importance that safety is overlooked. Individuals involved in accidents become the statistics which measure both the needless waste of human life, as well as material resources. We must continually keep safety foremost in our minds as we perform our work and also unhesitantly call to the attention of others any of their unsafe practices which we observe.

"Unsafe acts which result in accidents are costly to the worker, his family and the nation. These factors should be motivation for us to strive to attain the President's goal. Let us continue to increase our efforts to prevent accidents and establish safety records comparable to the nine organizations cited above for Safety Awards."

FIRMS NAMED FOR RAMJET PROJECT

(Continued from page 1)

Advanced Research and Technology. The work will be carried out under the technical direction of the Langley Research Center with the assistance of the Ames Research Center, Lewis Research Center, and Flight Research Center.

The project seeks eventual construction of a ramjet research engine as a means of advancing the technology of air-breathing propulsion which NASA has been developing for many years into the hypersonic regime of flight.

Until recently, the design and construction of such an engine would have been virtually impossible, because of important gaps in essential knowledge. Through continued research the gaps appear to have been narrowed sufficiently to make the construction of a research engine feasible.

Due to its relative fuel economy, the ramjet engine is considered a promising propulsion system for flight missions at hypersonic speeds -- those above 3,300 miles per hour or more than five times the speed of sound. The ramjet powerplant is expected to be useful for the hypersonic transport aircraft, for boosters, and for spacecraft flying within the atmosphere.

Because the Hypersonic Ramjet Experiment Project is intended ultimately to include flight research with the engine mounted on the X-15 No. 2 airplane, the contractors will use as guidelines for preliminary design a weight limitation of 800 pounds and dimensions compatible with mounting the research engine underneath the aft fuselage of the of the X-15. The airplane is capable of speeds up to about Mach 8.

Liquid hydrogen fuel is specified for the research engine, which must be capable of operating at flight speeds between Mach 3 (about 2,000 mph) and Mach 8 (about 5,300 mph).

Dr. Floyd L. Thompson, Director, recently presented the Shop Safety Award to nine groups for having a record of no lost-time accidents during the calendar year. Top left - Dr. Thompson presents the award to Percy R. Keffer, Head of Modelmaking Branch. Top right - Receiving the award from Dr. Thompson is Raymond M. Hulcher, Head of Instrument Construction Shop. Looking on is Robert F. Goodness, Head of Machine Branch. Center left - Herbert C. Roehm, Head of Heavy Machine Shop, receives the award for his group. Center right - Frank Plotz, Head of Electronic Shop, is presented the award. Lower left - J. E. Freeman, Head of Light Machine Shop, receives the award for his group. Lower right - Dr. Thompson addressed a group of Electrical Systems Division supervisors who received awards. They are (from left): Joseph Getsug, Division Chief; August V. Sansone, Head of Electrical Shop; Aubrey L. O'Kelley, Head of Electrical Equipment Utilization Section, and Cletus J. Vincke, Head of Electrical Systems Applications Branch. Absent when the pictures were taken were Martin J. Menges, Head of Electrical Distribution and Drive Section, and John H. Haverstock, Head of General Electrical Service Section.

APPRENTICE EXAM OPENED

A competitive examination for admission to Apprenticeship training is now open. A copy of the examination announcement and the application form may be obtained from the Board of Civil Service Examiners, extension 4681.

In addition to an experience requirement described in the announcement, competitors will be required to pass a written test for aptitude for learning trade theory and practice. The test includes questions in Arithmetic, Algebra, Geometry and Physics, and requires about 3-1/2 hours. Sample questions will be sent to applicants with the card of admission to the test.

Apprentices will be appointed in the following trades and applicants will have an opportunity to express trade preference at the time of appointment: Aircraft Mechanic, Electrician, Electronic Instrument Mechanic, Machinist, Sheetmetal Worker, Test Facility Mechanic, and Wood Modelmaker.

The minimum age is 16; there is no maximum. The written test will be given only at the Langley Research Center and will be scheduled during the month of May. Those desiring to take the first scheduled test on May 1 should submit their applications not later than April 19. The closing date for receipt of applications is May 3.

LECTURE SERIES PLANNED

Dr. Hans Sagan, Professor of Mathematics at North Carolina State College, will be at the Langley Center on April 15, 16, 19 and 20. He will deliver lectures on the following topics in optimal control theory:

April 15 - "Formulation and Discussion of Optimal Control Problems" (Minimum time control problems, minimum integral control problems, terminal control problems and examples).

April 16 - "The Calculus of Variations Approach" (A discussion of necessary conditions for the minimization of integrals and their generalization to the problem of Mayer).

April 19 - "The Dynamic Programming Approach" (Minimization of integrals by the optimality principle and the application of the optimality principle to the problem of Mayer).

April 20 - "The Maximum Principle of Pontryagin" (optimal control problems with inequality constraints).

The lectures are scheduled to be held each day at 10 a.m. in Room 219, Building 587. Each lecture will last approximately two hours. Persons interested in attending should contact Ernest Armstrong, telephone 2254.

GEORGE H. RIGGIN RETIRES

George H. Riggin, Experimental Facilities Mechanic in Mechanical Service Division, retired Marcy 31 after completing 25 years of service at the Center.

Riggin was born February 22, 1902 in Seaford. He attended school in Seaford and took a number of courses at the Ford Service School in Norfolk.

From 1920 to 1940 he worked for Spratley-Rogers Motor Company in Hampton. He entered on duty at the Center on March 4, 1940.

WANTED: Ride from Riverdale Plaza Apartments to W.A. on 8 shift. Anspach, 3221.

WANTED: Ride from Deer Park area to W.A. on 8 shift. Goad, 3421.

ELEVEN PRESENTED CASH AWARDS

Eleven employees and one former employee recently received cash awards for applications that might result in the granting of patents by the United States Government in connection with their inventions on the job.

Robert J. Keynton, Applied Materials and Physics Division, received $500 for his suggestion entitled "Technique for Control of Free-Flight Rocket Vehicles."

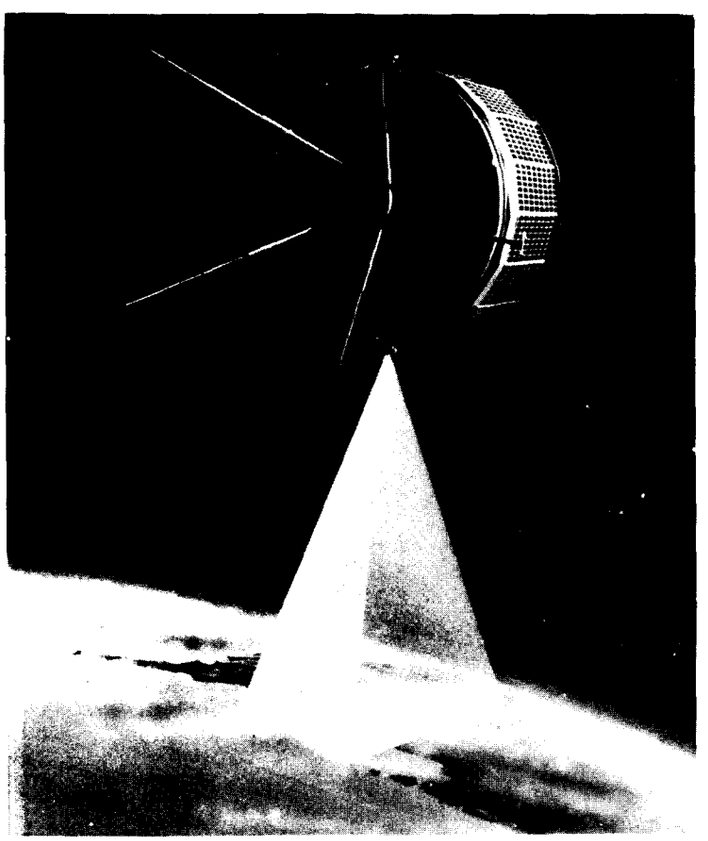
Thomas R. Turner, Full-Scale Research Division, was presented $100 for his suggestion "Double Hinged Flap."

William C. Sleeman, Full-Scale Research Division, shared $400 with Thomas A. Toll, former Langley employee, for suggestions entitled "Aircraft," "Supersonic Aircraft," and "Swept Wing Aircraft."

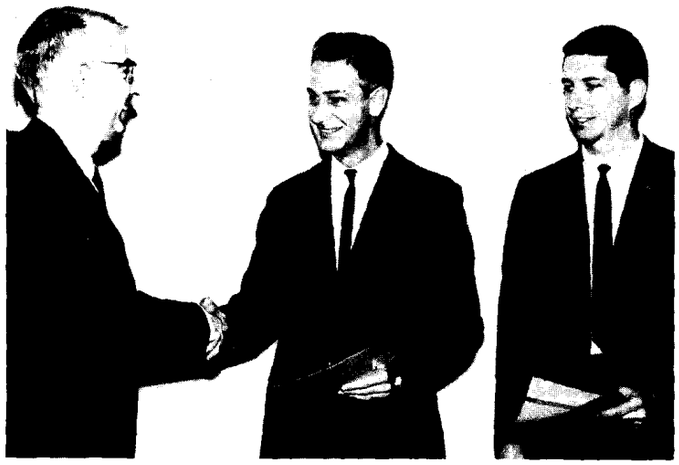
Arthur L. Newcomb, Electrical Systems Division, received $200 for "Variable Duration Pulse Integrator."

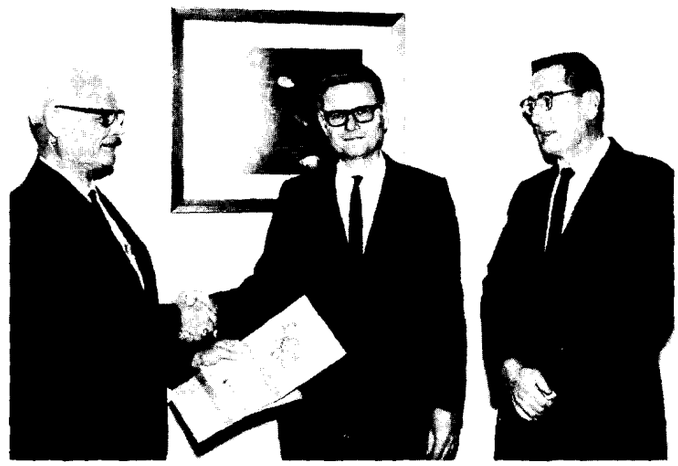
Wilbert C. Falk and Austin D. McHatton, both of Flight Vehicles and Systems Division, shared a $400 award with Joseph V. Boyle, Mechanical Service Division, for a "Canister Closing Device."

Allen R. Vick, Earl H. Andrews, and Dr. Kennedy F. Rubert, all of Aero-Physics Division, shared a $500 award with Charles B. King, Mechanical Services Division, for a "Method of Obtaining Permanent Record of Surface Flow Phenomena."



As TIROS IX rolls like a drum around the world 12 times every 24 hours in a north-south orbit almost directly over the poles, one of its two cameras is cartwheeled into taking direct aim at the earth's cloud cover once every three seconds. NASA's ninth successful TIROS is turning in valuable weather data over the vast reaches of the ocean and remote land areas where regular reports cannot be obtained.





Eleven employees recently received cash awards for applications that might result in the granting of patents. Top left - H. A. Wilson (left), Chief of Applied Materials and Physics Division, presents a check to Robert J. Keynton. Top right - Mark R. Nichols (left), Chief of Full-Scale Research Division, presents awards to William C. Sleeman and Thomas R. Turner. Center left - Arthur L. Newcomb (right) receives his award from Joseph Getsug, Chief of Electrical Systems Division. Center right - Edward C. Kilgore (left), Chief of Flight Vehicles and Systems Division, congratulates Wilbert C. Falk and Austin D. McHatton. Lower right - L. I. Turner (left), Assistant Chief of Aero-Physics Division, presents checks to Allen R. Vick and Earl H. Andrews. Lower right - Percy J. Crain, Chief of Engineering and Technical Services, congratulates Charles B. King and Joseph V. Boyle.

SMALL BUSINESS FIRMS ASKED FOR BIDS ON NASA FATIGUE RESEARCH LABORATORY

The Langley Research Center has issued an invitation for bids on a new construction project valued at approximately $1,000,000, with the special provision that the work is to be done by a small business firm.

In making the bids available only to small business, NASA is carrying out a national policy which requires that a fair proportion of government procurement be placed with small business firms in the interest of maintaining the nation's full productive capacity.

The new building to be called the Fatigue Research Laboratory, was authorized by Congress last year as part of the Fiscal Year 1965 NASA construction program. Bids for the project will be opened April 23 at 2 p.m. and completion of the work will require 440 days.

Site for the new building is in the West Area, adjacent to the existing Structures Research Laboratory (Building 1148). A group of frame structures now occupying the site will be removed as part of the contract.

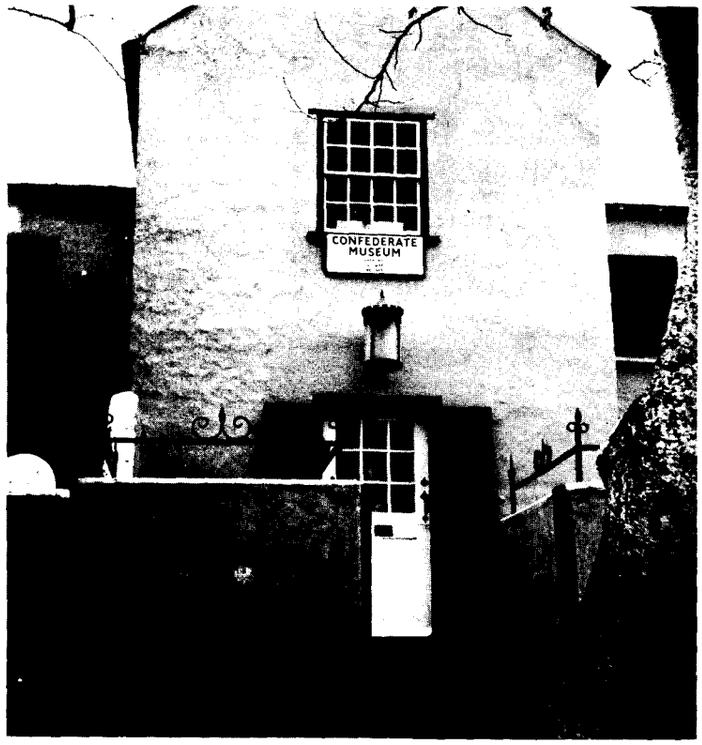
The new laboratory will be a steel frame building approximately 100 by 200 feet by 30 feet high. Foundation piling will be driven to support the structure, which will include 5,000 square feet of heavy duty floor.

Fatigue is the engineer's term for a weakening or deterioration of metal or other material occurring under repeated loads. It has been an important area of research at Langley for many years.

The new structure will bring under a single roof fatigue research projects now in scattered temporary areas, and will permit an extension of research which is needed to establish the technology required by supersonic and hypersonic aircraft and space vehicles intended for long-term or reusable service.

The constant search and development of new materials required in the Nation's space and aeronautical programs has intensified the need for systematic fatigue research, since the properties of the new materials cannot be determined from research on dissimilar specimens.

Langley procurement officials explained that a small business construction firm is defined as an independently owned and operated company which is not dominant in its own field, and whose average annual receipts for the past three fiscal years have not exceeded $7.5 million.



Bob Nye, Langley Researcher Staff Photographer, was stationed aboard the USS Harold J. Ellison for the Gemini Manned Space Flight. While waiting in Bermuda to board his ship, Bob took a few scenic shots on the island. Shown in the top photo is the Confederate Museum in St. George. The lower photo is a view of the shore line in Hamilton.

WANTED: Driving combination from Deer Park area to vicinity of Building 1148 on 8 shift. Jones, 3331.

FOR SALE: Catamaran, 14-foot sloop rig, stainless steel rigging - $350. Chiles, 245-6492.

FOR SALE: Plywood super sailfish, completely equipped. Wood, LY 6-3445.

FOUND: Westbrook pipe with straight stem in Building 1292. Call 4514.

FOR SALE: 10 x 12-foot Hettrick wall tent - $70. Morefield, 595-0230.

FOR RENT: One bedroom furnished apartment in Poquoson. Wainwright, 868-9233.

FOR SALE: Lowery organ with built in Leslie speaker - $795. Morgan, 723-3415.

FOR SALE: 3-bedroom, 1-1/2-bath house with fireplace and garage, 6 Lucerne Circle - $19,500. Johnson, 596-9096.

FOR SALE: 4-bedroom house near Wythe Shopping Center. Boswell, 247-6791.

FOR SALE: 1956 Rambler station wagon, 1954 Dodge with 1956 V-8 motor - $125, Kirby vacuum cleaner, and 21-foot Belvin cabin boat with Willis Jeep motor. King, CH 7-3817.

WANTED: Ride from Northampton area to W.A. on 8 shift. Wright, 826-3268.

FOR SALE: 1961 International Scout, 4-wheel drive - $1150. Johnson, 826-4547.

FOR SALE: 1955 2-door Chevrolet Belair, V-8, automatic transmission - $300. Dodds, PA 3-5118.

FOR SALE: 3-bedroom rancher with attached garage, located in Hampton Terrace. Lee, 838-1319.

FOR SALE: 14-foot Wolverine runabout with windshield and controls, 25 hp Evinrude motor and trailer -$275. Verser, UN 8-4731.

Langley Researcher

VOLUME 4, NUMBER 8 LANGLEY RESEARCH CENTER APRIL 23, 1965

NASA LANGLEY PERSONNEL OFFICIAL RECEIVES CAREER EDUCATION AWARD

William L. Williams, an official in the Personnel Division, has been chosen to receive the annual Career Education Award of the National Institute of Public Affairs.

William L. Williams

Williams, who is head of Classification, Wage Administration and Organization Branch, was one of 55 civil servants to receive the award, which provides a year of graduate study related to problems of public policy and the management of public programs.

The awards, presented in recognition of exceptional ability, outstanding performance, and high potential for future leadership shown by nominees from throughout the United States, are made under a Ford Foundation grant and cover tuition and a $1,000 cash grant. The award winners continue to receive their salaries while attending school.

The winners represent 23 Federal agencies and the states of Arizona, California, Hawaii, Michigan, New Mexico, New York, Oregon, and Virginia.

Williams will attend Indiana University under the awards program during the next academic year, participating in a new educational effort to prepare career officials for executive posts in government scientific and engineering programs. Five other universities participate in the Career Education Awards plan--Chicago, Harvard, Princeton, Stanford, and Virginia.

Williams was born July 28, 1930 in Cleveland, Ohio. He received his B.S. degree in Business Administration from Youngstown University in Ohio in 1959 and joined the Personnel Division staff in May 1959. He received an M.A. degree in Personnel Management from George Washington University in April 1961. He is president of the Hampton Roads Classification Association, comprised of representatives of Federal installations in this area.

The National Institute of Public Affairs, located in Washington, D.C., is a non-profit educational organization dedicated to improving the quality of the public service and the ideas and information used in developing public policy.

In cooperation with the U.S. Civil Service Commission, the NIPA is sponsoring an orientation meeting for all 1965 Career Education Award Winners from May 16-19 at Williamsburg. Its purpose is to prepare recipients of awards for their year of university study so that they may take maximum advantage of this opportunity.

EMPLOYEE SUGGESTIONS, COST REDUCTION PROVE REWARDING

The Center's employee suggestion program is proving rewarding for approximately five percent of the staff who are submitting suggestions. Suggestions adopted can result in either cash awards or honorary awards and in either instance the fact that the suggestion was adopted becomes a part of the individual's personnel record. This is given consideration in personnel actions relating to promotions and job assignments.

Cash awards are based on the dollar savings or the significance and extent of application of the suggestion. Five percent of the savings (up to $10,000) which the idea produces is awarded to the employee when his suggestion is adopted. For savings of over $10,000 this percentage is scaled down in small increments. For contributions which do not lend themselves to measurement in dollar savings, the intangible value is determined and an award of up to $1,000 is authorized.

Of the suggestions submitted, many are ineligible for either a cash or honorary award because they are ideas which could be simply employed within the suggester's own organization and they are more of a routine maintenance or normal job requirement. Although the suggester is not required to discuss his suggestion with his supervisor, this practice is recommended. The supervisor's endorsement of the idea is an indication that he considers the idea to be beyond the normal requirements of the employee's job, that the idea is not routine maintenance, or a function which can be simply placed in effect within his own section.

Remember also the awards committee, in considering a suggestion for an award, is concerned with the savings the idea will provide, and a suggestion which states a problem without a solution is not an eligible suggestion.

Since all suggestions should propose a way to save Federal funds, each suggestion received is also given consideration as a cost reduction item and whenever feasible these ideas are utilized as part of the Center's Cost Reduction Report.

ASM TO HEAR BONNETT

The Hampton Roads Chapter of the American Society for Metals will meet on Monday, April 26 at Eli's Restaurant in Hampton.

George M. Bonnett, a member of the Welding Engineering and Radiography Department in charge of the Nondestructive Testing, Newport News Shipbuilding and Dry Dock Company, will be guest speaker. His subject will be Nondestructive Testing. The topic includes radiography, dye penetrant, magnetic particle, zyglo, and ultrasonic inspection for material defects such as cracks, porosity, inclusions, laminations, lack of fusion, etc. The techniques, the advantages, disadvantages, and limitations of these

(Continued on page 4)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGEMENTS. . .George C. Canavos, Analysis and Computation Division, recently became engaged to Athena Balafas, Winston-Salem, North Carolina. No date has been announced for the wedding. . .Making plans to desert the bachelor ranks is Russell B. Sorrells III, Full-Scale Research Division. He is engaged to Lucile Lathan Faulkner, Nashville, Tennessee, and plans call for a June wedding.

BABY DERBY. . .Weighing in at six pounds, ten ounces on April 6 was Nancy Susan, daughter of Jack E. Harris, Lunar Orbiter Project Office. . .Celebrating the birth of a son on April 9 is Robert R. McWithey, Structures Research Division.

NEWLY WEDS. . .Wedding bells rang on April 17 when Charles H. Iley Jr., Instrument Research Division, took his final vows with Paula E. Houck, Hampton, at the First Presbyterian Church in Hampton. John R. Haeger, also of Instrument Research, was an usher. . .George L. Bewley, Mechanical Service Division, and Rita Rivers Moore, Hampton, were married April 11 in Trinity Methodist Church, Marshallberg.

AMES CONFERENCE PLANNED

NASA will sponsor a two-day conference on passive gravity gradient stabilization at the Ames Research Center on May 10 and 11.

The meeting will bring together space electronics experts from government and industry to exchange views and hear reports on gravity gradient stabilization research.

The first-day session will be devoted to mission requirements and satellite systems and configurations. Second day will emphasize component technology and flight experience.

Gravity gradient systems use the Earth's gravitational field to stabilize a satellite when it is desirable to keep one end always pointed toward Earth. The system is based on the tendency of a long object with mass concentrated at the ends to point to the center of the Earth. This eliminates the need for powered attitude-control devices.

Results of research by NASA's Office of Advanced Research and Technology and industry are now being used by the Office of Space Science and Applications to design experimental stabilization and control systems for testing on three of the five scheduled Applications Technology Satellites.

FOR RENT: 4-room house in Poquoson. Bunting, 868-9447.
FOR SALE: Hot Point 39-inch electric range. Cross, 595-0969.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of April 26:

Monday - Puree of bean soup, chicken and dumplings, breaded veal cutlet, Polish sausage, grilled cheese and bacon sandwich.

Tuesday - Green split pea soup, roast ribs of beef, fried chicken livers, grilled Canadian bacon, fish cakes.

Wednesday - French onion soup, grilled steak, stuffed shrimp, stuffed pepper, tamale pie.

Thursday - Chicken-vegetable soup, Swiss steak, broiled ham slice, fried chicken, western omelette.

Friday - Clam chowder, half-pound chopped steak, fried shrimp, broiled fish, barbequed sandwich.

The menu for the week of May 3 is as follows:

Monday - Cream of tomato soup, Spanish pot roast, grilled pork chops, chicken chow mein, baked hash.

Tuesday - Consomme julienne, roast leg of lamb, corned brisket of beef, smoked pork sausage, cheese omelette.

Wednesday - Vegetable-beef soup, roast beef, shrimp gumbo, grilled liver and onions, meat croquettes.

Thursday - Beef broth, grilled steak, roast pork, fried chicken, hot dog.

Friday - Clam chowder, fried clams, barbequed beef chunks, boiled ham, broiled fish, Irish omelette.

FOR SALE: 14-foot runabout with windshield and steering wheel. Fodrey, 596-6257 after 5.
FOR SALE: Philco tape recorder - $70. Christian, PA-28306.

MICHAEL PRESENTS PAPER IN GREECE

A paper on "The Lunar Orbiter Project Selenodesy Experience" by William H. Michael Jr. and Robert H. Tolson, both of Space Mechanics Division, will be presented by Michael at the Second International Symposium on The Use of Artifical Satellites for Geodesy. The symposium will be held in Athens, Greece April 27 through May 1.

Michael will discuss how the NASA Lunar Photographic Orbiter Project will provide an opportunity, perhaps the first opportunity, for significant improvement in knowledge of the lunar gravitational field through analysis of tracking data from a lunar satellite. A description of the Lunar Orbiter spacecraft system will be given with special reference to system and mission aspects which have particular influence on the selenodesy experiment. An outline of the technical plans for gravitational parameter determination will be indicated.

The results of some preliminary analyses will be discussed, including a comparison of tracking data types in relation to the selenodesy experiment, estimates of accuracy of determination of harmonic coefficients based on tracking data characteristics, a comparison of short and long-period determinations of various coefficients, possible correlations between gravitational coefficients and other perturbations, tracking cycle requirements, and the effect of mission constraints on gravitational parameter determination.

ASTRONAUTS REHEARSE SPACE DOCKING

More than a dozen astronauts have already "flown" missions in which they locked a manned spacecraft on to another vehicle while both craft "orbited" at a speed of 17,500 miles per hour.

NASA won't tackle its actual rendezvous and docking maneuver until early next year when it will be done as part of the two-man Project Gemini flights.

Fourteen astronauts have held realistic dress rehearsals in a special simulator at Langley Research Center.

The simulator is a man-carrying moveable spacecraft capsule that duplicates all the vehicle motions occurring in the final stages of the docking-rendezvous process.

In effect, the simulator provides "driving-tests" for the man in space.

ATTENTION: RESERVISTS

Employees who are members of reserve units of the military services who have not advised the Personnel Office of their status are urged to do so. Also all reservists are requested to keep the Personnel Office informed as to any change in their military status. Such information should be given to Jane Swartzwelder, telephone 2568 or 2272.

FOR SALE: Special ignition coil. Downing, 245-4720.

FOR SALE: 14-foot Wolverine boat with Mercury Mark 75 outboard motor, and trailer. Diggs, 851-0872 after 4:30.

FOR SALE: 18-foot high-power Correct Kraft inboard runabout - $1700. Boykin, 838-1428.

FOR RENT: 3-bedroom house with stove and refrigerator. Moss, 723-8997.

FOR SALE: Assembly manuals for Heathkit models AA-21C and AJ-43C - 75¢ each. Youngblood, CH 5-3347.

FOR SALE: 1955 Plymouth station wagon - $200; 30-gallon electric hot water heater - $25. Bunting, 868-9447.

Two happy youngsters are playing astronaut in a model of NASA's Mercury spacecraft. The vehicle, like that in which six Project Mercury astronauts rode into space, is part of the Space Park at the New York World's Fair which opened Wednesday. While the nose of the Mercury model rocks up and down, its young passengers hear a countdown and than see, on a screen before them, a film of the earth 100 miles below.

FINAL REPORT ON CAMPAIGN

A. Bruce Amole, who served as chairman of the Center's 1965 joint fund raising campaign for the National Health Agencies and the Federal Service Joint Crusades, has received a report from C. W. Lee, Campaign Director for the National Health Agencies.

In his letter Lee stated, "Tabulation of the results of the 1965 Federal Service Campaign for National Health Agencies indicates that the personnel of Langley Research Center contributed a total of $4,516.71. This total exceeds by approximately 38 percent the $3,261.89 contributed in the 1964 campaign."

Amole pointed out that the total amount contributed to the Joint Crusade will be announced as soon as a final report has been received.

WANTED: To join or form driving combination from Pavilion Apts. or Deer Park area to W.A. on 8 shift. DiCarlo, 4505.

FOUND: Instruction manual for Pickett slide rule near Building 1194. Cunningham, 4597.

WANTED: Boy's 16-inch bicycle with training wheels. Gregory, 596-2142.

LOST: "High Temperature Inorganic Coatings" by J. Huminik Jr., Kemp, 4811.

ASM MEETING APRIL 26

(Continued from page 1)

processes will be discussed for both ferrous and nonferrous materials.

George M. Bonnett

Bonnett received his B.S. degree in Chemical Engineering at the City College of the City of New York in 1940. He took graduate courses at Brooklyn Polytechnic Institute in 1941 and took part in the Westinghouse Bettis Plant Reactor Engineering Training program in 1956 and the Summer Conference course on Nondestructive Testing at Ohio University in 1962.

Bonnett has been with the Newport News Shipbuilding and Dry Dock Co. since 1952 and has held his present position since 1962.

Bonnett is active in the Society for Nondestructive Testing of which he is the immediate past chairman of the Hampton Roads Section and he served as chairman of the Marine Committee of the Technical Council

The meeting will be preceded by a social hour at 6 p.m., followed by dinner at 7 and the meeting at 8. Reservations must be made by Saturday, April 24.

HOUSTON CONTROL CENTER TO HANDLE MANNED FLIGHTS

Control of manned flight missions from the new Mission Control Center at the Manned Spacecraft Center will begin with the forthcoming Gemini/Titan-4 (GT-4) flight.

Dr. George E. Mueller, Associate Administrator for Manned Space Flight, announced the change of primary flight control from the Mission Control Center at Cape Kennedy to the Mission Control Center at Houston.

The GT-4 flight is scheduled for the third quarter of this year.

Mueller said Christopher C. Kraft will serve as mission director for the four-day orbital mission. He was mission and flight director for GT-3, a successful three-robit mission completed March 23.

The Mission Control Center at Houston will be operated on a three-shift basis with an approximate two-hour overlap between the shifts to insure smooth transition.

Kraft will also serve as one of the three flight directors, the other two being John Hodge and Gene Kranz. Because of his dual role, Kraft will divide his time before launch between Cape Kennedy and the control center at MSC. He will return to Houston on the afternoon prior to launch and control the final hours of the countdown from MSC.

During the launch phase of the count, the Cape Kennedy control center will provide backup in trajectory and launch vehicle telemetry areas. NASA's Goddard computer center will follow control of the flight on a backup basis and will provide information directly to Cape Kennedy during the launch phase.

FOR SALE: 1956 Plymouth - $100. Skates, CH 5-2194.

NASA BOWLING LEAGUES

Mexicali Restaurant continues to lead Group A in the NASA Tenpin League with 75 wins and 37 losses. Top scores were rolled by Henry Lee with a 277 game and 667 set.

Ivy Farms Shell lead Group B with 67 wins and 45 losses. Odd Balls follow in a close second with 66.5 wins and 45.5 losses. Top bowlers for the week were Gerald Hill with a 259 game and Joe Poslik with a 689 set.

Barristers lead Group C with 75 wins and 37 losses. High scoring honors went to Joe Drozdowski with a 306 game and 664 set and Marna Cordle with a 211 game and 612 set.

GROUP A

Mexicali	75	37	Electronic Shop	55	57
Phantoms	72	40	Short Circuits	48	64
Flyers	71	41	Hornets	47	65
Alley Cats	69	43	Devious	42	70
Unitary	60	52	Payloads	41	71
Frame Ups	59	53	Raiders	33	79

GROUP B			GROUP C		
Ivy Farms	67	45	Barristers	75	37
Odd Balls	66.5	45.5	Analogs	73	39
Beats Me	65	47	Question Marks	71	41
Misfits	64.5	47.5	ACD	64.5	47.5
Ranch House	62.5	49.5	Greenhorns	64	48
Cee Pees	62	50	Dillys	61	51
A-OK's	60.5	51.5	Alley Oops	57	55
Ten Benders	59.5	52.5	Gliders	53	59
Pinwigglers	58.5	53.5	Strike Outs	52	60
Flight Eng.	53	59	Dopesticks	51.5	60.5
Galaxies	52	60	Spare Parts	45	67
HMS	46	66	Lunar Ties	42.5	69.5
Malfunctions	34	78	Bowling Belles	41	71
Spare Oops	31	81	Mets	33.5	78.5

Light Machine Shop No. 1 leads the NASA Duckpin League with 86 wins and 44 losses. Light Machine Shop No. 2 is in second place with 62 wins and 58 losses. High scores for the week were rolled by John Moore with a 144 game and 372 set and Mary Edwards with a 142 game and 332 set.

Lt. Mach. 1	76	44	Rebel Bombers	60	60
Lt. Mach. 2	62	58	Tigers	57	63
Ten Spots	61	59	Strike Outs	44	76

ADCOCK AND JOHNSON DIE

Raymond F. Adcock, Machinist in the Heavy Machine Shop, Mechanical Service Division, died Monday night in Mary Immaculate Hospital.

Adcock was born December 1, 1896 in Halifax County North Carolina. He attended Enfield High School, Enfield N.C. and served in the U.S. Army from August 1918 to May 1919. He worked at the Newport News Shipbuilding and Dry Dock Company from 1935 to 1945 and joined the Center staff on October 22, 1945.

Lee E. Johnson, who retired from the Center on February 26, died last Friday in Kecoughtan Hospital.

Johnson was born February 28, 1898 in Newport News. He attended school in Newport News and served in the U.S Navy from January 1918 to December 1923. He entered on duty at the Center on December 14, 1949.

FOR SALE: 2-bedroom 1964 Great Lakes trailer - small down payment. Carbary, 877-0986 after 5 p.m.

FOR RENT: 3-bedroom, 1-1/2-bath house - $135 monthly. Boothe, 723-9243 after 5 p.m.

INQUIRING STUDENTS ADDING SPARK OF YOUTH TO ADVANCING SPACE AGE

Aerospace is a magic word, particularly to students all over the world. One indication of this is the large volume of mail received by NASA from young persons seeking information on the subject.

There is a virtual avalanche of such mail at the Langley Research Center, with the annual volume approaching 10,000 letters, double what it was two years ago. All signs point to a continuing increase as the science of flight advances.

Langley's Office of Public Affairs has the task of answering most of the letters-- mailing selected educational folders and brochures on various aspects of the aerospace program published for the purpose at Langley and by NASA Headquarters in Washington, D.C.

The publication and distribution of these documents to students and others interested in the aerospace program are part of NASA's effort to disseminate information to the public and to encourage an interest in science among the younger generation.

Many of the letters are routine-- but a few of them are as different as the projects about which the students inquire.

Some of the more aggressive students literally "aim for the moon" in making their requests-- asking for information on just about every project since the flight of the Wright Brothers over 61 years ago.

A few are considerate to the extreme-- such as the Davis, California, student who requested several pamphlets on space, but added this postscript: "If I am bothering you, you do not have to answer this letter." Or the Chester, South Carolina, youngster who said he was in no hurry for the information "as I know how much you have to do, but I would like to have it as soon as possible."

A Seaford, New York, boy asked for a fast delivery of his requested information, "because these pamphlets will play a strong factor on my term report in eighth grade general science." A Mt. Airy, North Carolina, student conceded that "your help will be very helpful to me."

The building of rockets and spacecraft is a popular student hobby. Some of the launch vehicle models are designed for flight, but performance was not important to the Laurel, Nebraska, young man who wrote that he was "trying to construct a homemade rocket which would not necessarily have to work, but be very impressive." A Pensacola, Fla., student promised that the NASA information "will be used in helping me in building this rocket and our school's bullinton bord."

The publications Langley makes available to students are free-- but occasionally a letter contains money in anticipation that there will be a small charge for brochures. The money is returned to the writer when the documents are mailed.

This practice meets with student approval, as evidenced by a young girl writing from Virginia Beach, Virginia, to express appreciation for booklets she received: "Thank you for returning my 15 cents. The fact that you did not have to and did increases my respect for you and others at Langley."

Another Virginian-- from Richmond-- who apparently handles his parents' money with reckless abandon emphasized that the information he wanted should be free-- "but if you have some extra well information that costs under 50 cents send this and I will send the money right after."

Frances N. Michie (right) and Bonnie R. Mertesdorf, Office of Public Affairs, answer some of the nearly 10,000 letters received in a year by the Langley Research Center requesting general information on aeronautics and space. The letters come from all sections of the United States and many foreign countries.

Most of the inquiring students are precise in their demands, but not all of them. A Long Island, New York, youngster wrote that he was "particularly interested in a booklet-- I do not know its name-- with a green cover and fairly numerous in pages."

Since scientific ability is not always accompanied by a flair for spelling or writing, there apparently is no cause for alarm at the letters received from future scientists in Richmond, Indiana-- "I am study about jets and misels in Science. I no some kid that got a picture of a misel and I sure liked it;" or Long Beach, New York-- "Please send me some stuf on rockets and controls and other stuf about rockets."

One letter reveals that there must be a few doubting Thomases in Colerain, North Carolina. A student requesting information on the solar system said he wanted it for school work and home use-- "I'm proving to some men that there is a planet and moon."

Another message is evidence that one does not have to be old to be a veteran of the space age. "I have liked space sence I was a baby," wrote a 12-year-old boy from Elmore Park School in Memphis, Tennessee, "and I hope to be good at it when I get in collage."

Here are excerpts from a few other letters;

Richmond, Virginia: "Please send me a list of constellations for the months of 1965."

Conway, South Carolina: "I would appreciate any informa- on space shots previously shot."

Royersford, Pa.: "Please send pictures of Langley and what goes on in each building during the day and night."

One of the most down-to-earth explanations for the growing student mail is supplied by a young space enthusiast of Montgomery, Alabama:

"The reason we write to you is because we can't find enough information in books. I have found that when you write to a company you get an unexpected amount of important facts."

CHEMICAL SAFETY CITED

Trichloroethylene is "practically" nonflammable and is considerably less toxic than carbon tetrachloride. Because of these favorable properties, it has become a widely used solvent for cleaning metals, glass, and fabrics and in the preparation of liquid soaps, paint removers, rubber cements, shoe polishes, etc. However, the hazard potential of trichloroethylene is sometimes overlooked, with serious consequences.

The threshold limit value (TLV) for trichloroethylene has been established at 100 ppm by the American Conference of Governmental Industrial Hygienists. The TLV is the time-weighted average concentration in air to which it is believed nearly all workers may be repeatedly exposed, day after day, without adverse effect. Concentrations of 160 ppm are just detectable by their odor; the absence of the odor cannot, therefore, be taken as a reliable indication that the TLV has not been exceeded. Prolonged exposure or frequent short exposures to concentrations higher than 200 ppm may injure the nervous system and liver.

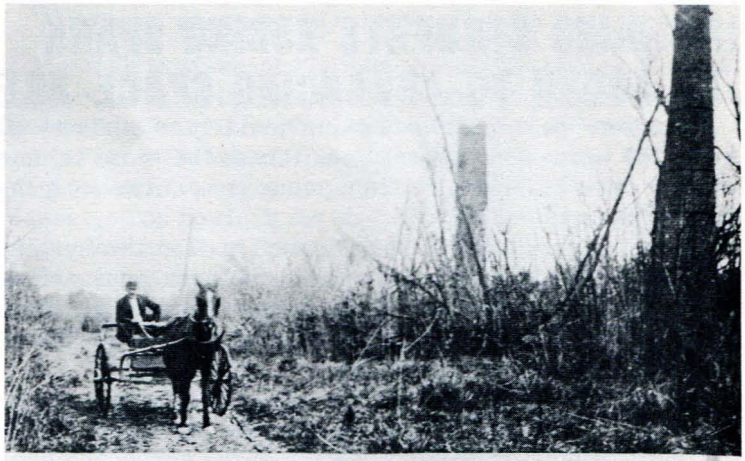
Concentrations moderately higher than 200 ppm may also cause nausea, dizziness, headache, and lethargy, although these symptoms do not necessarily indicate systemic poisoning. Repeated inhalation of trichloroethylene vapors may lead to craving and habituation. Inhalation of 1,300 ppm for six minutes is said to cause vertigo, pressure in the head, fatigue, and irritation of the mucous membranes. Prolonged skin contact may cause formation of blisters and, because of removal of the protective fat layer, may predispose to secondary infection and eczema.

The safe use of trichloroethylene thus requires adequate ventilation to remove harmful concentrations of vapors and protection against spills and splashes by the wearing of eye protection and resistant gloves and aprons.

When heated, trichloroethylene can decompose to form hydrogen chloride and phosgene. Appropriate precautions to protect personnel from fumes must be taken in fighting fires where trichloroethylene may be present. Care must also be taken to remove all residue in welding or cutting operations on metals which have previously been degreased with trichloroethylene.

Although trichloroethylene is considered nonflammable, some concern was aroused early in 1963 by a preliminary report from the U.S. Bureau of Mines showing the vapors to be flammable in air at temperatures above about 86 degrees F. The lower limit of flammability at 86 degrees F is about 12.5 percent; the upper limit is at least 90 percent (at 186 degrees F).

However, these data do not indicate any need for a change in current good industrial practice. It has been pointed out that the container walls in the flammability tests have an important effect on the results (original tests in glass; recent tests in steel). It would be difficult to reach the lower flammability limit of 12.5 percent under normal conditions of use. Also, while the vapors can be ignited under certain conditions, they will not readily support combustion and are extinguished when the heat source is withdrawn. The probability of initiating a trichloroethylene fire under the conditions of good ventilation usually found in industry thus seems low, as is substantiated by the record. Nevertheless, the fire hazard potential should be taken into account in the design of processes involving trichloroethylene.

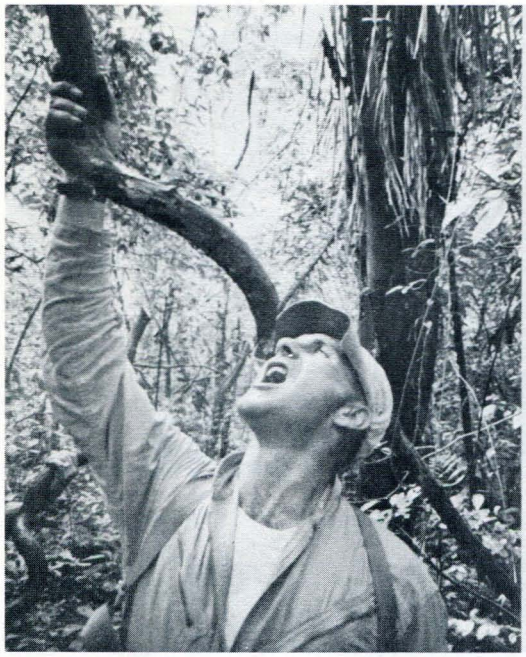


Fifty years of the history of transportation are depicted in these photos, both of which were taken at the same spot. The place is the site of the present NASA's Michoud Operations in New Orleans. Both the one-horse buggy, photographed in 1915, and the 32-million-horsepower Saturn I rocket booster are shown passing the same aged chimneys that now frame the entrance to Michoud's administration building. The brick chimneys are remnants of the plantation established by Antoine Michoud in the mid-1800's. A division of Marshall Space Flight Center, Michoud is production site for the first stages of the Saturn I, Saturn IB and Saturn V space vehicles.

Freshly exposed aluminum surfaces can react with trichloroethylene to form spontaneously flammable aluminum triethyl. Strong alkalies, such as caustic soda, may react with trichloroethylene to form chloroacetylene or acetylene dichloride gas. The reaction which takes place depends on the conditions under which the strong alkali is mixed with the solvent. Stabilizers, added by the manufacturer, act as a catalyst in the reaction. Chloroactylene is unstable and spontaneously flammable; acetylene dichloride is a flammable liquid with low flash point. In the presence of air, the reaction product can form violently explosive peroxides under the proper conditions. Also, trichloroethylene can be hydrolyzed at elevated temperatures to form hydrochloric acid.

Alkaline compounds and solutions should, therefore, be kept away from trichloroethylene. Parts cleaned in strong alkaline solutions should be rinsed and drained dry before being placed in contact with trichloroethylene. Conversely, residual trichloroethylene should be removed before exposure of parts to strong alkali.

Complete data sheets concerning trichloroethylene are available at the Safety Office, telephone 3310.



The nature of the work of an astronaut requires him to be prepared to endure the most rigorous conditions in the world - or any place else, for that matter. To learn to cope with jungle conditions, NASA astronauts went to Panama for a non-refresher course in survival. In the photograph at the left Astronaut Richard E. Gordon learns that life is where you find it - in this case in jucies from a tree that help sustain a man. Center photograph - Walter Cunningham leads a band of fellow astronauts ashore from an up-river forage for food and water. Right photograph - The astronauts take a breather in forced march. Their attire is informal but their regimen is severe. In the foreground (from left) are Astronauts Charles A. Bassett II, Alan L. Bean and William A. Anders.

ASTRONAUTS ISSUED SURVIVAL KITS

NASA has provided its Gemini flyers with a survival package containing 14 items designed to support an astronaut if he should land outside normal recovery areas.

The package weighs 23 pounds and has two sections. One section, holding a three and one half-pound water container and machete is mounted by the astronaut's left shoulder. The main package, containing the life raft and related equipment, is mounted on the back of the ejection seat.

Both packages are attached to the astronaut's personal parachute harness by a nylon line. After ejection from the spacecraft, as the seat falls clear and the parachute deploys, the survival kit will hang on a line, ready for use as soon as the astronaut lands.

Inflated, the one-man life raft is five and one-half feet long and three feet wide. A compressed air bottle is attached for inflation. The raft also is equipped with a sea anchor, sea dye markers, and a sun bonnet of nylon material with an aluminized coating to protect the astronaut's head.

In his survival kit, the astronaut also has a radio beacon, a combination survival light, sunglasses, a medical kit, and a desalter kit assembly. The combination survival light is a new development for the Gemini kit, combining many individual items which were carried in the Mercury kit.

About the size of a paperback novel, the CSL contains a strobe light for signaling at night, a flashlight, and a signal mirror built in on the end of the case. It also contains a small compass.

There are three cylindrical cartridges inside the case. Two contain batteries for the lights. The third holds a sewing kit, 14 feet of nylon line, cotton balls and a striker for kindling a fire, halazone tablets for water purification, and a whistle.

The desalter kit includes eight desalter brickettes and a processing bag. Each brickette can desalt one pint of seawater.

The medical kit contains a one cubic centimeter injector for pain, and a two cubic centimeter injector for motion sickness. There also are stimulant, pain, motion sickness, and antibiotic tablets and aspirin.

INDEBTEDNESS POLICY CITED

Employees are expected to pay their just debts and maintain a reputation in the community for honoring debts. The reputation of NASA employees as good credit risks must be protected against any detrimental effect of the action of a small minority. For these reasons, employees are expected to:

1. Honor valid private debts or to adhere to satisfactory arrangement for settlement;
2. Make timely payment of any indebtedness to the United States and,
3. Make prompt payment of a just debt to a state or local Government unit.

Failure to pay just debts may be cause for discinplinary action.

WANTED: Driving combination from Stoneybrook to W.A. on 7:30 shift. Parrish, 4845 or 877-3392.

WANTED: Driving combination from Westlawn Dr., Hallwood to W.A. on 8 shift. Henk, 4826 or 851-2226.

WANTED: Alternate driver from Glouster Point to W.A. on 8 shift. Sebacher, 4486.

WANTED: Driving combination from Stuart Gardens to W.A. on 8 shift. Leatherwood, 3561.

WANTED: Alternate driver from Beechwood area, Denbigh, to E.A. on 8 shift. Dickson, 2202.

NASA PUBLISHES RESEARCH RESULTS OF X-15 PROGRAM

The research results of the 10-year X-15 flight program have been summarized in a semi-technical publication by NASA.

The 126-page booklet, by NASA's Scientific and Technical Information Division, stresses the scientific research achievements of the joint NASA-Air Force-Navy program. It traces the history of the X-15 from early hypersonic flight studies by the National Advisory Committee for Aeronautics through the first 120 flights of the three rocket-powered research airplanes.

In a foreword, Paul F. Bikle, Director of NASA's Flight Research Center, where the X-15 airplanes are based, recalls that "the X-15 program and Project Mercury have represented a parallel approach to solving some of the problems of manned space flight. While Mercury was demonstrating man's capability to function effectively in space, the X-15 was demonstrating man's ability to control a high performance vehicle in a near-space environment."

Bikle notes also that lessons learned in the 120 powered flights by the X-15 in the first five years of flight test are being applied to manned space programs where the pilot is playing a much greater role, such as the Gemini program.

The flight research program has given space-flight planners greater knowledge on the techniques and problems of manned flight and reentry and "future space programs may well include a lifting reentry and a more conventional landing on Earth, in the fashion demonstrated by the X-15," Bikle concluded.

In highlighting the research achievements of the airplane, the booklet tells how the X-15 program has pointed the way to simplified operational concepts and an increased chance of success in future manned space missions.

The aircraft's research capability is narrated in a chapter on its role as a "flying laboratory" in the area between the 20-mile altitude limit of balloon-borne instruments and the 100-mile orbiting satellites. Five experiments have been carried out in this corridor, and seven more are planned. One experiment with instruments to determine the Earth's horizon will aid in the design of devices to be used to navigate the Apollo spacecraft.

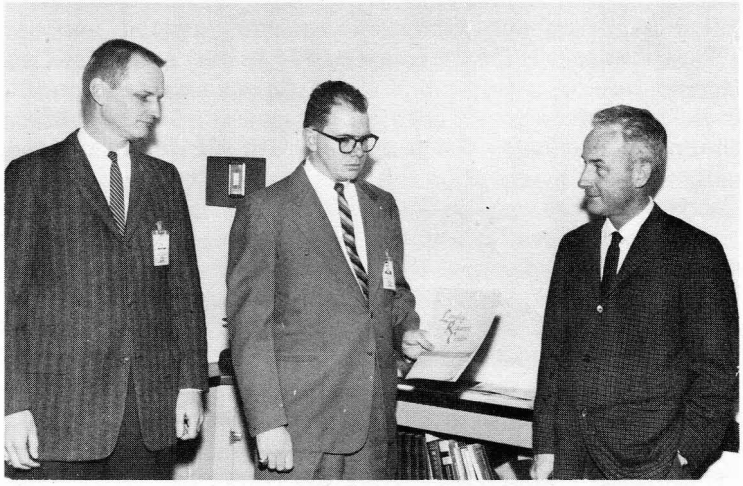
Copies may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., for 55 cents.

NIP CLIP MISUSE

A survey conducted by the company publication of Lloyd's Bank of England as to the fate of 100,000 paper clips showed:

14,163 were twisted or broked during telephone calls.
17,200 were used as makeshift bra or suspender hooks.
5,434 became toothpicks.
5,308 were used as fingernail cleaners.
19,143 served as chips in card games.
3,196 were used as pipe cleaners.
Thousands were dropped on the floor to be swept away.
Only 20,000 of the 100,000 were used to clip papers together

FOR SALE: Golf clubs - driver, 7 irons including wedge and putter, bag, cart, balls - $50. Sullivan, 596-6104.



Three employees recently received cash awards under the NASA Incentive Awards Program. Top photograph - Robert Y. Green (center) receives a $50 check from William B. Mayo, Chief of Mechanical Service Division, for suggesting "changing anode in plasma accelerator." Looking on is H. L. Chaffin (left), Head of Research Facilities Service Section C. Center photograph - Joseph Getsug (left), Chief of Electrical Systems Division, presents a $100 check to James E. Michael for his suggestion entitled "the substitution of A. C. firing circuits for D. C. circuits used in launching space vehicles." Bottom photograph - Pierce L. Lawing (center) received a $100 cash award for suggesting "a high-speed, high-power spark generator." Shown with him are John V. Becker , Chief of Aero-Physics Division, and Fred M. Smith, Head of Hotshot Tunnel.

Langley Researcher

VOLUME 4, NUMBER 9 LANGLEY RESEARCH CENTER MAY 7, 1965

TWO PROGRAMS PRODUCED AT LANGLEY INCLUDED IN NASA SIX-PART SERIES

WVEC Television (Channel 13) is presenting "Space: Man's Great Adventure," a series of six half-hour documentaries produced by the National Aeronautics and Space Administration and including two programs made at the Langley Research Center.

The programs, being presented Sundays at 5:30 p.m., began April 25 and will continue through May 30. Each show is designed to illustrate a different facet of the human contribution to research and development in the fields of aeronautics and space.

Several Center staff members are shown in the two Langley programs, the first of which is scheduled for May 23. Entitled "A is for Aeronautics," the program traces the American contribution to flight-- from the Wright Brothers to the present-- illustrating Langley's research effort in various areas of aeronautics in its nearly half century of service to the nation.

The finale of the series May 30 will feature another program produced at Langley-- "Voyage to the Moon." It discusses Langley's advanced space research activities and describes the unique space simulators in operation or under construction at the Center in support of Gemini, Apollo, and other programs.

"The People of Pad 37" is the title of the next program, scheduled for May 9. This includes a behind-the-scenes look at the NASA Kennedy Space Center, focusing on the men responsible for launching the Saturn, and including a visit to the launch pads used by Astronauts Shepard and

(Continued on page 5)

William B. Mayo (right), Chief of Mechanical Service Division, presents a check for $25 to David S. Vohringer for his suggestion pertaining to "design and use of wheel dolly." The award was made under the NASA Incentive Awards Program.

SLOGAN AND SYMBOL CONTEST PLANNED ON COST REDUCTION

James E. Webb, NASA Administrator, has authorized a NASA-wide contest to provide NASA with a Cost Reduction Symbol and a Slogan. Local contests will be conducted at each installation. The local contests will offer monetary awards up to $250 each for a slogan and a symbol and the winners of local contests will compete for grand prizes of $500.

The purpose of the contest is to solicit ideas which will assist in the selection of a NASA Cost Reduction Symbol and a NASA Cost Reduction Slogan. It is also anticipated that the contest will stimulate greater awareness of and participation in the NASA Cost Reduction Program.

All NASA employees who qualify for consideration under provisions of the Civil Service Regulations governing Incentives, Awards, and Suggestions, and the NASA Inventions and Contribution Regulations in Chapter 17 of the NASA Management Manual are eligible for participation. Personnel working directly in the areas of Cost Reduction and Incentive Awards are ineligible to participate as are those individuals selected to act as contest judges.

Local awards of not less than 50 dollars nor more than $250 each will be made for a slogan and a symbol selected to compete in the NASA-wide contest. A total of not less than $100 nor more than $500 may be awarded to an entry which contains both the winning symbol and the winning slogan. A number of attractive personalized prizes will also be awarded to runner-up entries. Local winning entries will compete in a NASA-wide contest with a cash award of $500 each to the originators of the winning slogan and the winning symbol or a total of $1000 if the winning slogan and symbol are submitted as one entry.

Two separate contests are being conducted: one for the purpose of selecting a cost reduction slogan and the other for selecting a cost reduction symbol. Monetary and other awards will be identical for both contests.

Contestants may elect to participate in one or both contests or to submit a combined entry containing both a slogan and a symbol. Entries should be marked on the transmittal envelope to indicate whether they are to be considered for the symbol contest, the slogan contest, or both.

All entries must be submitted on bond-type white paper, size 8 x 10-1/2 inches.

Slogans will be judged for originality and for appeal. They should be composed with the idea of developing a "catchy" but not "slangy" phrase that will be useful in getting people to "think cost reduction" and should not exceed 15 words.

Symbols should attempt to strikingly depict the idea of cost reduction and/or the benefits associated with it in a manner which clearly identifies the effort as a NASA effort ot associated with the NASA mission. Neatness is required, but entries will be judged by concept and not by

(Continued on page 5)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGED. . .Making plans to desert the bachelor ranks is George E. Dickerson, Mechanical Service Division. He is engaged to Barbara Faye Smith, Newport News, and plans call for an August 1 wedding.

NEW ARRIVALS. . .Announcing the birth of a daughter on April 16 is Stephen P. Horvath, Mechanical Services. . . Thomas L. Homsley, Instrument Research, became the father of a son on April 15. . .Weighing in at seven pounds, ten ounces on April 23 was Colleen Marie, daughter of Rodney Goering, Research Models and Facilities. . .Celebrating the birth of a son, Brian Erik, on April 5 is David Whittaker, Electrical Systems Division.

INTERNATIONAL. . .The management of the new Wythe Cinema has announced that, in response to suggestions by a number of Center employees and other patrons, the theater has established a policy of featuring outstanding international motion picture productions.

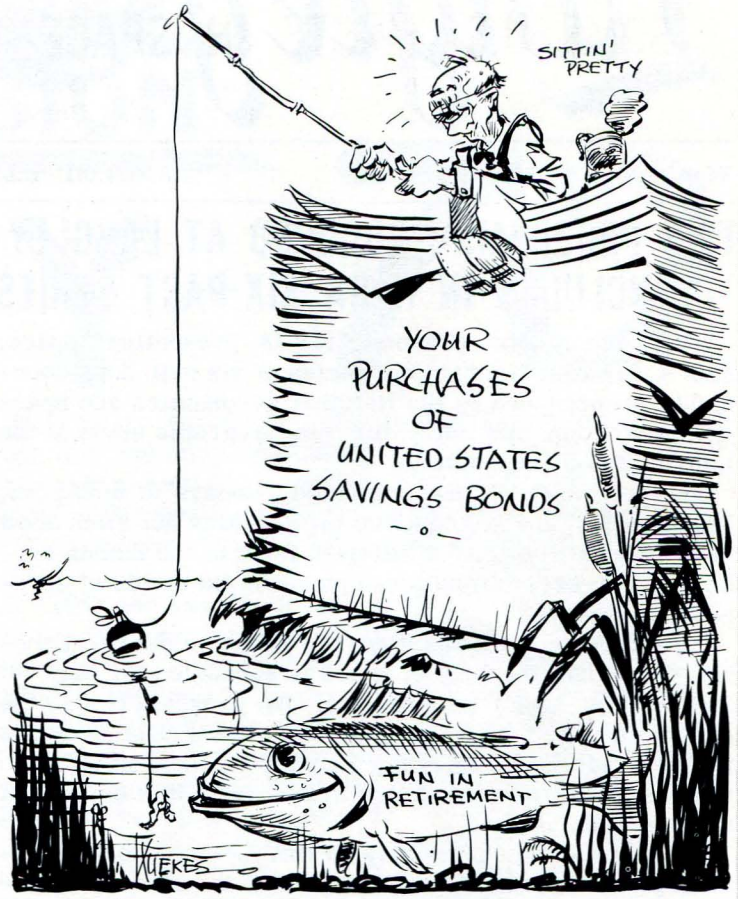
EAT EARLY. . .Next Monday, Tuesday, and Wednesday approximately 300 visitors will be attending a conference at the Center and will use the West Cafeteria facilities. Staff members who eat in the West Cafeterias are requested to finish their lunch periods before 12:30 p.m. on these days. West Cafeteria will start serving at 10:45 a.m.

SUMMER BOWLING. . .A meeting of persons interested in summer bowling will be held May 12 at 7 p.m. in the Activities Building. A tenpin league of 8 to 10 teams will be formed to bowl at Century Lanes at 8 p.m. on Tuesdays.

ASTRONOMY CLUB. . .The Skywatchers Astronomy Club will have a viewing session with telescopes tomorrow night at 7 o'clock at the Activities Building. All interested persons are invited to attend.

LITTLE LEAGUE. . .The Hampton-Wythe Little League begins its playing season tomorrow and will finish July 8. Employees interested in umpiring ball games four evenings or less a week are requested to call Hardy Cash, league president, at CH 5-5425 after 6 p.m. All games are played at the Armstrong Elementary School.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on May 11 from 3 p.m. until 4 p.m. Beverly Beale, Government-wide Service Plan representative, will be here on May 19 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Harris, 2523, for an appointment.



CAFETERIA MENU

The following menu will be served in the cafeterias during the week of May 10:

Monday - Tomato-rice soup, beef stroganoff on buttered noodles, roast fresh ham with applesauce, deep fried turkey cutlet, Spanish omelette.

Tuesday - Puree of bean soup, baked Virginia ham, braised short ribs of beef over rice, fried shrimp steak, hamburger.

Wednesday - Vegetable-beef soup, Spanish pot roast, grilled Canadian bacon, fried chicken, franks and beans.

Thursday - Chicken-vegetable soup, grilled steak, chicken chop suey, fried fish sticks, chili con carne.

Friday - Clam chowder, roast beef, fried oysters, broiled fish, barbecued sandwich.

The menu for the week of May 17 is as follows:

Monday - French onion soup, roast veal, grilled ham slice, fried chicken livers, fish cakes.

Tuesday - Cream of tomato soup, sliced turkey with dressing, Salisbury steak, barbecued spareribs, baked hash.

Wednesday - Consomme julienne, roast beef, shrimp Newburg, liver and onions, beef ravioli.

Thursday - Vegetable-beef soup, grilled steak, spaghetti with meat sauce, fried chicken, chili dog, hot dog.

Friday - Clam chowder, Swiss steak, stuffed flounder, broiled fish, ham and macaroni casserole, cheeseburger.

FOR SALE: 18-foot Deadrise cabin boat with 25 hp Gray Marine engine - $800. Diggs, 868-3821.

SOME U.S. FIRSTS IN SPACE

The flight of the first maneuverable spacecraft - the GT-3 last March 23 - served as a reminder of other United States firsts in the history of space development. Some of these were recently outlined to Congress by a key official of NASA.

Dr. Homer E. Newell, NASA's Associate Administrator for Space Science and Applications, told the House Committee on Science and Astronautics that U.S. scientific satellites achieved the following firsts:

Discovery of the radiation belt, determination of the earth's irregular shape, ionospheric topside sounding (with Canada), solar spectroscopy, X-ray and ultraviolet satellite astronomy, polar orbits, and high eccentric orbits to map the earth's magnetosphere.

U.S. deep space probes achieved the first successful direct monitoring of the interplanetary environment, the first lunar surface detail, the first live television pictures of the moon, and the first successful flight to Venus. And, Dr. Newell pointed out, the U.S. soon may achieve the first successful flight to Mars, when NASA's Mariner IV completes its mission in July.

In launch vehicle development, this program has yielded the first rocket stage using the high energy fuel combination of hydrogen and oxygen. It also has yielded the first and only all solid fuel space booster.

U.S. TIROS and Nimbus meteorological satellites have yielded the following first: daylight cloud photography, night cloud observations including surface and cloud top temperatures, world cloud coverage, global heat balance and stratospheric temperature measurements, and direct cloud picture transmission to local users.

U.S. communication satellites have been first in the following achievements, Dr. Newell said: deployment of large structures in space and their use as passive reflectors of radio signals; active repeating of radio signals at various altitudes and orbits of interest to system designers; transoceanic and intercontinental relay of teletype, facsimile, voice, data, and television; and achievement of the first true geostationary orbit.

NASA GOLF LEAGUE

A meeting of the NASA Golf League will be held on Wednesday, May 12 at 7:30 p.m. in the Activities Building. The purpose of the meeting will be to elect new officers and establish rules for the coming season. Anyone wishing to play in the league should attend the meeting.

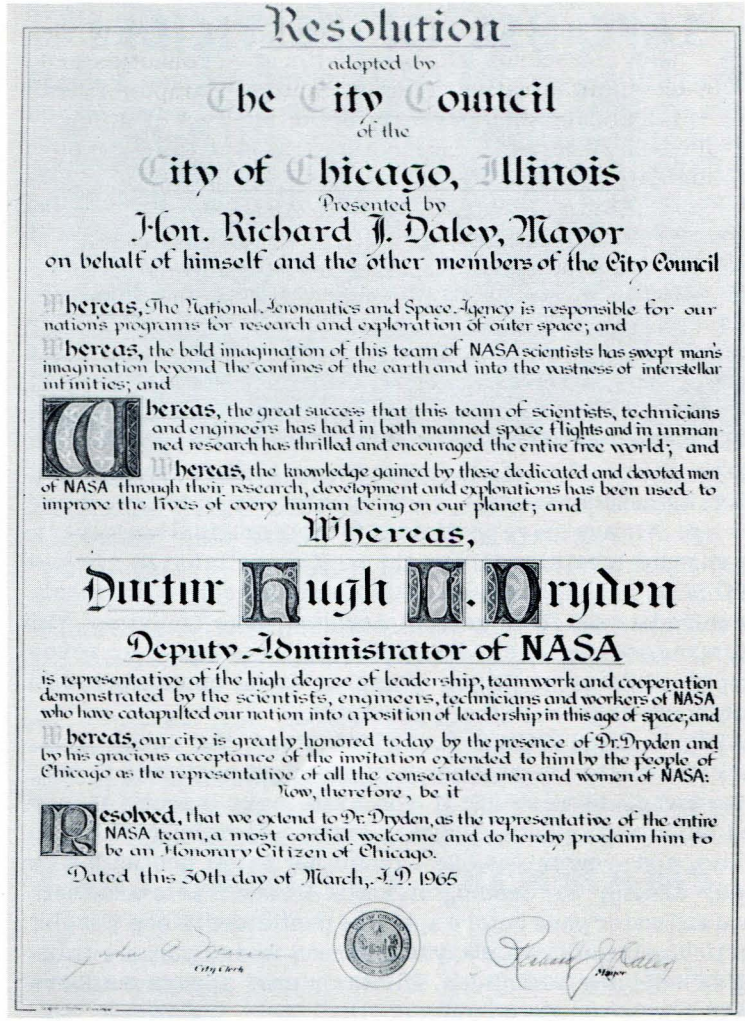
Teams which already have complete rosters (7 or more players) should send the rosters to Frank Lawrence, West Fabrication Shop, Mail Stop 216, Building 1232.

PROFESSORS TO VISIT CENTER

Dr. Richard T. Eppink and Dr. Johan A. Friedericy, Department of Civil Engineering and Applied Mechanics, University of Virginia, will visit the Center on Tuesday, May 18 to discuss the graduate program.

Dr. Thomas L. Reynolds and Dr. Sidney Lawrence, Department of Mathematics, College of William and Mary, will visit the Center on Wednesday, May 12 to discuss the graduate program in Mathematics.

Employees wishing an appointment should call the Training Office, telephone 2611.



Resolution

adopted by

The City Council

of the

City of Chicago, Illinois

Presented by

Hon. Richard J. Daley, Mayor

on behalf of himself and the other members of the City Council

Whereas, The National Aeronautics and Space Agency is responsible for our nations programs for research and exploration of outer space; and

Whereas, the bold imagination of this team of NASA scientists has swept man's imagination beyond the confines of the earth and into the vastness of interstellar infinities; and

Whereas, the great success that this team of scientists, technicians and engineers has had in both manned space flights and in unmanned research has thrilled and encouraged the entire free world; and

Whereas, the knowledge gained by these dedicated and devoted men of NASA through their research, development and explorations has been used to improve the lives of every human being on our planet; and

Whereas,

Doctor Hugh L. Dryden

Deputy Administrator of NASA

is representative of the high degree of leadership, teamwork and cooperation demonstrated by the scientists, engineers, technicians and workers of NASA who have catapulted our nation into a position of leadership in this age of space; and

Whereas, our city is greatly honored today by the presence of Dr. Dryden and by his gracious acceptance of the invitation extended to him by the people of Chicago as the representative of all the consecrated men and women of NASA:

Now, therefore, be it

Resolved, that we extend to Dr. Dryden, as the representative of the entire NASA team, a most cordial welcome and do hereby proclaim him to be an Honorary Citizen of Chicago.

Dated this 30th day of March, A.D. 1965

City Clerk

Mayor

The above resolution was presented on behalf of the Honorable Richard J. Daley, Mayor of Chicago, and members of the City Council, to Dr. Hugh L. Dryden, NASA Deputy Administrator, during his recent Chicago visit to participate in the ceremonies for Astronauts Virgil I. Grissom and John W. Young. Since this presentation was made not only in appreciation of Dr. Dryden's own contribution, but that of the entire NASA team, Dr. Dryden would like to share the honor bestowed.

COURSE OFFERED STAFF

The York County Adult Education program is sponsoring a course in Introduction to Digital Computers. The course will cover the following two topics -- a general introduction to digital computers and data processing systems and an introduction to programming an IBM 1401 digital computer.

Registration and the first class meeting will be held at 7 p.m. on Monday, May 10 in Room 105, York High School. The fee for the course will be $10 and the class will meet on Monday and Thursday evenings for a period of 10 weeks.

For further information call the York County Adult Education Office, telephone 898-5957, during the day or the instructor, Richard Margason, telephone 877-1376 after 5.

FOR SALE: Set of two Lafayette model HA-70A walkie-talkie units. Gillis, LY 6-5938.

FOR SALE: Hacker 26-foot speed boat with Cadillac Crusader engine, 18-foot boat with 25 hp inboard engine, and 1964 Ford travel wagon. Thomas, OX 3-6423 Gloucester.

SAFE USE OF PESTICIDES

PESTICIDES-- in the Home-- in the Garden-- You can control pests in your home and garden with safety, if you use pesticides properly.

READ THE LABEL - If not handled and applied properly, many pesticides can injure (some can even kill) wildlife, fish, honey bees, domestic animals or humans. The first rule of safety in using any pesticide is to read and follow the directions and precautions on the container label. Do this each time you use a pesticide; don't depend on your memory. Many pesticide manufacturers include leaflets of instructions with their products. Carefully read these also.

STORE PESTICIDES SAFELY - Store pesticides in closed, well-labeled containers, where children or pets cannot reach them. Do not place them near food or feed. Do not store them under the sink, in the pantry, or in the medicine cabinet. Always leave pesticides in their original containers. Be sure the labels remain on them. If a pesticide is marked "POISON," it will have an antidote statement on the label. Be sure to read it. In case of accident, take container with you when seeking medical assistance. Do not save or reuse empty containers. Rinse glass or metal containers with water and dispose of them promptly.

APPLY PESTICIDES SAFELY - Read the label first. Determine the right amount of the right pesticide to use. Overdosage is wasteful; it won't kill more insects; it may be injurious to plants, and may leave a harmful residue on fruits and vegetables. Be careful not to get pesticides on food, dishes, or cooking utensils. Remove pets and their food and water pans before applying pesticides. Keep people, particularly children, away from areas where you are mixing or applying pesticides. Dilute or mix sprays outdoors or in a well ventilated place.

When the label warns against it, be sure to avoid breathing pesticidal dusts or mists. Keep your face away from, and to one side of, the cap when opening a container.

Handle liquid concentrates and oil-base sprays as though they were flammable.

Place poison bait out of reach of children and pets. (Baits for rats, ants, and roaches account for a high percentage of the cases of accidental swallowing of pesticides by children under 12 years of age).

Do not use a pesticide in the home if the label says a gas mask is required in its application.

In handling any pesticide, avoid prolonged contact with the skin. Use protective equipment if the label recommends it. Avoid excessive contamination of clothing when spraying or dusting.

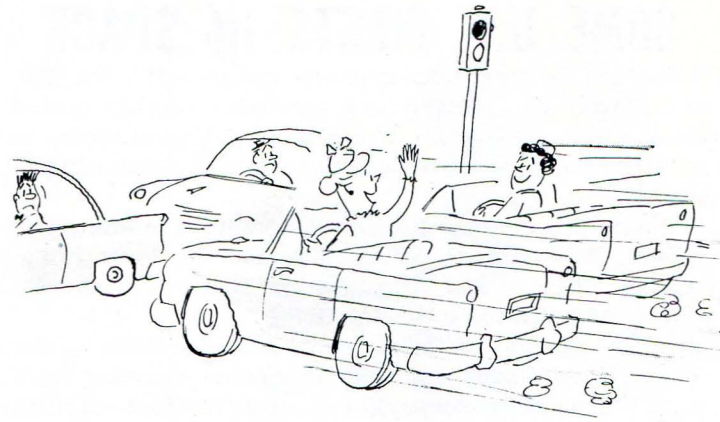
Do not use your mouth to blow out clogged lines, nozzle tips, or other equipment parts, or to siphon a pesticide from a container.

When spraying or dusting pets, be sure pesticide is labeled for such use.

Do not smoke while handling pesticides.

FOLLOW THESE SAFETY MEASURES - Wash with soap and water and change clothing immediately if you spill a pesticide concentrate on skin or clothing.

If you get a concentrate in your eyes, flush them with plenty of water for 15 minutes and get medical attention. If you accidentally swallow some pesticide, or if you feel ill effects after using it, call your physician at once. Read the label to him, naming the active chemical ingredient. Observe any antidote instructions on the label.



"Yoo hoo! Ethel. Let's have lunch together."

APPRENTICE HONOR ROLL

Twenty-one apprentices completed the mid-semester of the spring term with an average of 97 or above. Members of the honor roll are:

Ralph W. Brown, General Aerodynamics; Charles E. Cockrell, Research Projects and Models; David S. Coombs, Instrument Construction Shop; David C. Davis, Electronic Shop; David Duxbury, 11-inch Hypersonic Tunnel; Glenn A. Gates, Fatigue Lab; Stephen Irick, Dynamic Vehicles; James J. Kiss, Structures Laboratory; Virgil S. Laney, Electrical Flight Systems; Thomas K. Lusby Jr., Simulator Development Section; Otha V. Marshall Jr., Spacecraft Equipment.

Also Allen N. Milton, General Electrical Services; Donald R. Nelson, Heavy Machine Shop; Cecil G. Phillips, Microelectronics Section; Garland F. Prillaman, Electronic Shop; Wayne W. Rohrbach, Sensor Development Section; Ceylon C. Short Jr., Fabrication Shop; James R. Smith, Light Machine Shop; Robert A. Smock, 7 x 10-foot Wind Tunnels; Larry W. Swartz, Electrical Flight Systems, and Kenneth F. Test, Ground Support Systems.

WANTED: Driving combination from Deerfield or Bayberry area to E.A. on 8 shift. Harris, 2631.

FOR SALE: Swing and slide gymnasium set - $12. Butler, LY 6-3394.

FOR SALE: 1954 Plymouth, Miller, 877-3431.

FOR SALE: 1964 Triumph TR4 - $2400. Rogallo, 838-2266.

WANTED: Driving combination from Dutch Village Apts. to Wainwright shift. Tomlinson, 8426

SLOGAN AND SYMBOL CONTEST

(Continued from page 1)

graphic and artistic skill in depicting the concept. The concept should be described in simple concise language and although it is desirable that a rough sketch be submitted to illustrate the concept, the absence of an accompanying sketch will not affect favorable consideration of the entry.

Format for submissions is as follows: Print or type on the top third of the page 1. The name of the Installation, 2. Name of Contestant, 3. Designation of local organizational element and 4. Submission date. Label the submission "Symbol," "Slogan" or "Symbol and Slogan" and include appropriate details and descriptive language.

There is no restriction on the number of entries which may be submitted. However, not more than one award may be given to an individual in the same category (i.e., the same individual may receive a slogan award and a symbol award but may not receive first and second prize in either contest.)

Submission of entries for the Center contest should be sent to the Incentive Awards Office, Mail Stop 124, by the close of business on Friday, May 28. Judges for the Center contest will be selected from the membership of the Incentive Awards Committee.

NASA BOWLING LEAGUES

Mexicali Restaurant continues to lead Group A in the NASA Tenpin League with 83 wins and 37 losses. Flyers are in second place with 78 wins and 42 losses. Top scores were rolled by John Campbell with a 227 game and 603 set.

Barristers lead Group C with 82 wins and 38 losses. In second place are Question Marks with 78 wins and 42 losses.

GROUP A

Mexicali	83	37	Electronic Shop	59	61
Flyers	78	42	Short Circuits	53	67
Alley Cats	76	44	Hornets	47	73
Phantoms	73	47	Devious	43	77
Unitary	66	54	Payloads	42	78
Frame Ups	66	54	Raiders	34	86

GROUP C

Barristers	82	38	Gliders	57	63
Question Marks	78	42	Dopesticks	56.5	63.5
Analogs	77	43	Strike Outs	56	64
ACD	68.5	51.5	Spare Parts	48	72
Greenhorns	68	52	Lunar Tics	47.5	72.5
Dillys	64	56	Bowling Belles	42	78
Alley Oops	58	62	Mets	37.5	82.5

The NASA Duckpin League completed its season this week with Light Machine Shop No. 1 taking first place with 81 wins and 47 losses. Rebel Bombers ended up in second with 68 wins and 60 losses. Top scores for the week were rolled by Elwood Putnam with a 142 game, John Dupere with a 359 set, Mary Edwards with a 122 game and Mary Lou Wood with a 122 game and 340 set.

Lt. Mach. 1	81	47	Tigers	63	65
Rebel Bombers	68	60	Ten Spots	61	67
Lt. Mach. 2	64	64	Strike Outs	47	81

FOR SALE: 18-foot Catamaran, sloop rig, fiberglas hulls - $600. Woerner, 851-2878.

FOR SALE: 3-bedroom brick rancher with attached garage, fenced backyard, in Brentwood. Bohon, LY 6-7937.

Lou Martin (second from left), Business Manager of the Peninsula Grays baseball team, met with officials of the Activities Association last week to arrange for a special NASA night at the Peninsula Memorial Stadium. NASA night will be on May 21 when the Grays meet Winston-Salem. Game time is 7:45 p.m. and tickets may be purchased from the District Representatives to the Activities Association. Tickets are 50 cents for adults and children under 15 will be admitted free. Shown with Martin are (from left): Ray Goodman, Chairman of the Activities Committee; Al Cosgrove, 1st base; Sam Thompson, outfield; Tom Perdue, outfield, and Clyde Mashore, catcher. The representative selling the most tickets will receive two season passes.

TWO LANGLEY PROGRAMS

(Continued from page 1)

Glenn for their historic Mercury flights.

"The Woman's Touch" is to be shown May 16, illustrating the significant contributions women are making to space research and development throughout the NASA. The program was produced at Goddard Space Flight Center, Greenbelt, Maryland, and features a mother of four and her role at Goddard in the development of an electronic system for a spacecraft.

The two programs already shown by WVEC include "The Dream That Wouldn't Down" (April 25), the story of Dr. Robert H. Goddard-- the father of rocketry, and "Keeping an Eye on Ginny" (May 2), the contribution of the Tiros satellite to accurate weather forecasting-- including scenes at Chincoteague, Wallops Station, and Suitland, Maryland.

IEEE SECTION MEETS MAY 14

The Hampton Roads Section of the Institute of Electrical and Electronic Engineers will meet on May 14 at Parker's Restaurant, 3608 George Washington Highway, Portsmouth. A social hour will be held at 6:30 p.m. followed by dinner at 7:30 and the meeting at 8:30.

E. Newman Henry, Westinghouse Electric Co., Air Arm Division, Baltimore, will be guest speaker. His subject will be "Life Testing of Electronic Power Transformers."

Basically the talk will be a report on the procedure used by Westinghouse in testing transformers for airborne applications. Included in the report will be the results of a series of tests on a 250VA, 400 cycle, single phase transformer design for use onboard an aircraft. According to Henry, this procedure can be applied to larger transformers as well as to those intended for shipboard applications.

For reservations call Frank Serft, 3461, or Cary Spritzer, 3446, by noon on Friday, May 14.

SST FLIGHT SIMULATOR PLANNED

NASA pilots will be able to "fly" the supersonic transport before it is built using a new advanced flight simulator.

Ames Research Center has let a $1,382,000 contract for fabrication of what appears to be the most capable and versatile flight simulator yet undertaken.

The contract went to the American Machine and Foundry Company of York, Pennsylvania, and covered motion-generating equipment, and other machinery for the flight simulation device. Structure to house the big machine and its data handling equipment are not included in the contract. Design was done by the Ames Research Center and estimated completion date is mid-1966.

The new device will be able to simulate nearly all flight situations for aircraft (and, in future applications, for spacecraft) except cases involving high acceleration forces on the pilot, or aerobatics. However, its immediate task will be to simulate transport aircraft operations with emphasis on the U.S. supersonic transport.

The large-scale new simulation system will simulate flight basically by producing the motions a pilot would feel in flight, and by projecting a picture of the changing landscape on a screen in front of him. The system will be known as the Flight Simulator for Advanced Aircraft.

A replica of a typical transport aircraft cabin with operating instrument panels and stations for three-man crew will be a principal feature.

The simulator will provide "all meaningful inputs to the human senses experienced in manned control of advanced aircraft during all phases of operation," said John Dusterberry, Chief of the Analog and Flight Simulator Branch at Ames.

"This means," he added, "that we will be able to duplicate most aspects of a supersonic transport flight, say from San Francisco to Chicago. We should be able to get enough realism that the crew will feel it has actually made the flight. In the future, using the same basic equipment, we may well provide close simulation of manned recoverable booster flight, and of moon and planet landings and takeoffs."

The simulator was designed by the Research Facilities and Equipment Division at Ames. It will have "six degrees of freedom," which means it will move in all possible axes of motion: fore and aft, vertical, and side-to-side; plus pitch, roll, and yaw.

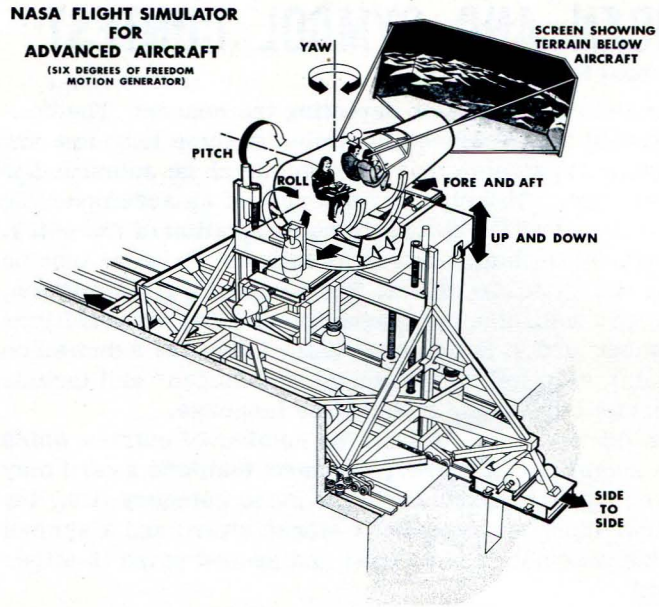
While various other six-degrees-of-freedom motion simulators exist, the new machinewill be by far the largest ever built, it is believed.

It will be unique in having 100 feet of lateral motion. This is needed to simulate supersonic transport (SST) flight because the SST crew will be far forward of the center of rotation of the aircraft. Hence, yawing movements will be very large.

Broad side-to-side motion is also needed to provide the feeling of changes in direction, says Shizuo Doiguchi, project manager.

"Most downward and upward movements can be satisfactorily simulated by tilting the cabin up or down a few degrees. However, the large amount of sidewise motion available in the new machine will allow more realistic simulation of changes in direction than was possible formerly," he explained.

Much of the simulation for the new device as for previous simulators, will be handled by a small television camera.



NASA pilots will be able to "fly" the U.S. supersonic transport aboard the new Flight Simulator for Advanced Aircraft shown here. The new flight simulator will be located at Ames Research Center. It will help develop design data for the SST in such areas as aerodynamic stability, control systems, and crew division of labor. The machine will be about four stories (40 feet) high when the cockpit is in climb position. Its weight will be 70,000 pounds including 4,000 pounds of payload. The new device will provide virtually all sensations that will be experienced on a future supersonic transport flight.

The camera "flies" over a model of the airport or countryside being traveled over. What it "sees" is projected on a screen in front of the simulator cockpit windows. These visual systems are effective enough to make the pilot feel he is "flying" above the simulated landscape as the television camera moves over it.

The new simulator will contribute SST design data, such as how to divide up among crew members the work of running the aircraft. The simulator will help researchers learn how much inherent aerodynamic stability the plane must have to be flown by human pilots. Its results can suggest the best kind of control system and requirements for most efficient operation of hydraulic and electric systems.

The pilot will see, feel, and hear the consequences of each control action, and, therefore, will respond to his own actions.

In general, motions will be produced by electric motors driving either chain or drive screw systems.

Limits of motion for the simulator will be plus or minus 45 degrees in roll, plus or minus 22-1/2 degrees in pitch, plus or minus 30 degrees in yaw, ten feet up and down, eight feet forward and back, and 100 feet side-to-side.

Rapid accelerations in the various axes of motion will be obtained with high-response electrical servo drives.

The simulator will be housed in a building covering a site 43 by 190 feet.

FOR SALE: E-flat alto saxophone. Bragg, 826-2737 after 5.

WANTED: Ride from Washington St., Hampton, to W.A. on 8 shift. Dalin, 4607.

FOR SALE: 18-foot boat - $290. Gilman, PA 2-5847.

SPACE CONFERENCE PLANNED

The Fifth National Conference on the Peaceful Uses of Space will be held May 26-28 in St. Louis as a major event in the city's 200th anniversary celebration.

Held annually under sponsorship of the NASA, the conference serves as a forum for reporting the latest scientific and technical advances in space related activity.

Dr. Hugh L. Dryden, NASA Deputy Administrator, will be the opening speaker. Other NASA speakers include Dr. George E. Mueller, Associate Administrator, Office of Manned Space Flight; Dr. Homer E. Newell, Associate Administrator, Office of Space Science and Applications; and Dr. Raymond L. Bisplinghoff, Associate Administrator, Office of Advanced Research and Technology.

Other activities in conjunction with the conference are programs for high school students at the University of Missouri (Columbia) on May 13 and 14 and at Kiel Auditorium in St. Louis May 14 and a NASA exhibit at the City of St. Louis McDonnell Planetarium in Forest Park, May 14-31.

The student program, one of the major activities of the conference, will include presentation by four NASA space scientists and an astronaut who will describe the extent of the U.S. space program and the scientific results obtained to date. Schools in Missouri and Illinois have been invited to send selected students and accompanying teachers. In addition, 65 students selected by competition will be invited to attend the main conference May 26.

The exhibit will feature major displays of equipment used by NASA in space exploration and will feature a comprehensive array of models of space rockets, capsules and satellites which present the story of U.S. space accomplishments.

The conference is expected to attract leaders in space research, as well as experts from all sectors of the industrial, business and academic communities. Program details will be announced later.

The steering committee for the conference is headed by David S. Lewis, President of McDonnel Aircraft Corp. The conference, Lewis said, "will give the nation and experts throughout the world a new understanding of the contributions to world peace and human betterment that are flowing from America's programs of space exploration."

Previous Peaceful Uses of Space Conferences were held in Tulsa, Seattle, Chicago and Boston.

EMPLOYEES DONATE BLOOD

The Red Cross Bloodmobile visited the Center on April 22 and staff members donated a total of 129 pints of blood.

F. S. Rogers reached the five-gallon mark and Kenneth Pierpont completed his quota for four gallons. J. Douglas Deale received a three-gallon pin.

Two-gallon pins were presented to Robert E. Shanks, Sue Wilder, and Robert Green. Receiving one gallon pins were J. P. Deginder, Earle Koch, Samuel Plott, and Harry Carlson.

Assisting during the visit were Dr. E. E. Peltz and Dr. S. Poleksic.

FOR SALE: Sailfish. Phillips, LY 5-1248 after 4 p.m.

FOR SALE: 18 hp Johnson outboard motor. J. L. Hudgins, Hayes 642-2501.

FOR SALE: 20 gauge Model III Remington shot gun - $90. Post, 245-7428 after 4 p.m.

Shown with NASA-232 are (from left): Thomas J. Kenney, Ernest C. Hooper, Joseph B. Emerson, S. J. Kubalak, Randolph W. Mixon, Robert D. Collie and C. G. Phelps. This aircraft, which left Langley on April 21 for a two-month assignment at Ascension Island in the South Atlantic, and a second C-546, NASA-238, are equipped with special purpose optical instrumentation designed and installed by Langley engineers and technicians. Project Fire Tracking and Data Acquisition Manager J. N. Daniel, who accompanied NASA-238 to Ascension Island on April 7 with Stanley Press and Andrew Carey, will direct the activity at Ascension which includes checkout and operator training of the tracking telespectrograph, an advanced ground-based optical instrument designed for Project Fire data collection. During the Project Fire mission, the aircraft will be stationed at altitudes of 10,000 feet along the reentry flight path to collect vital optical and telemetry data.

SEVEN RECEIVE HONORARY AWARDS

Seven employees recently received Honorary Suggestion Awards under the Center's Incentive Awards Program. The award is in the form of a certificate which becomes a permanent part of the employee's personnel record. It gives recognition to an individual who has made a suggestion that has been accepted and put into use. The Honorary Suggestion Award is presented when a cash award is inappropriate because the suggestion is related to the employee's regular duties.

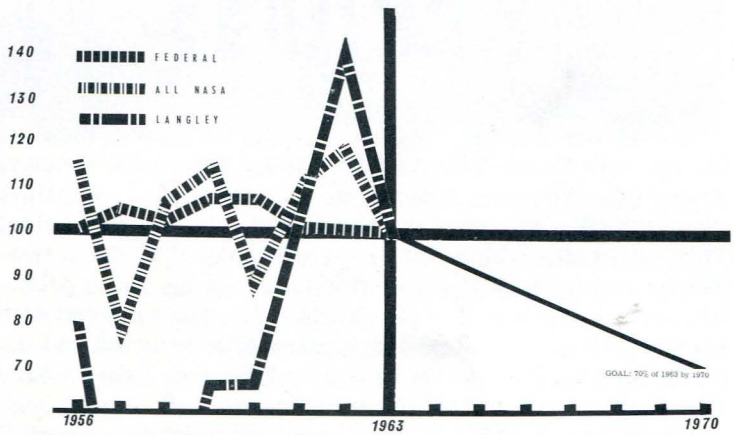
The following members of the Mechanical Service Division received awards: Rodney C. Brogden for "a fixture for removing nozzles in high-temperature test facilities;" Howard B. Miller for "a method for securing lead wires to miniature electronic pressure gauges;" John B. Hart for "conversion of a manually operated rotary air bearing table to an electrically operated rotary air bearing table," and George C. Gray for "a fixture for removing liners from electric arc chambers."

William L. Grantham, Instrument Research Division, received an award for "small clean room enclosures for component evaluation tests."

Paul A. Hunter, Flight Mechanics and Technology Division, was honored for "improved property records."

Wilbur T. Quinn, Procurement Division, was recognized for "reducing delay time on purchases requiring rerouting of purchase requests."

MISSION SAFETY 70



The Safety Office has prepared a chart to indicate our goal and standing in Mission Safety 70. This program of accident reduction was initiated by the President in February with a challenge to reduce the federal employee injury frequency rate to 70 percent of 1963 (base year) by 1970.

In 1963 the Langley Research Center suffered 1.29 disabling injuries for each million man-hours worked, thus our goal is a constant year by year reduction so that by 1970 our rate will be .9 per million man-hours worked.

This is not an impossible task -- from 1957 through 1960 we were below our goal for 1970. With a little extra effort on each employee's part, we should certainly be able to equal our best previous record.

This has to be an individual effort, for just one disabling injury can be the difference. Don't let it happen to you.

MESSENGER SERVICE NOTICE

Despite the significant improvement in the Center's messenger service during the past year, there is still room for further improvement. Below are a few suggestions, which if adopted by each staff member, will improve the flow of mail within the Center's distribution system:

1. Address all mail clearly, using a mail stop number in each case. Check the Center's Telephone Directory for mail stop numbers.
2. Mark off the previous mail stop on messenger envelopes before using them.
3. Have material ready in time to meet pick-up schedules. Don't delay messengers while addressing material.
4. Provide clearly marked In and Out trays at all mail stops.
5. Do not send boxes or large packages through the messenger service. Use the Package Delivery Service.

Suggestions are always welcome which will improve the messenger service. Anyone having suggestions may call Guy Boswick, 3511.

TENNIS CLUB NOTICE

The Tennis Club will meet on May 11 at 7 p.m. in the Activities Building. Slides of the recent National Indoors Tennis Tournament held at Salisbury, Maryland, will be shown following the business meeting.

Topics to be discussed are a survey of area tennis facilities, updating of the Langley tennis directory, formation of a men's and mix doubles ladder, and intradepartmental tournaments. All interested persons are invited to attend. For further information call A. W. Muller, 4521.

KNOW YOUR CREDIT UNION

Once again readers are reminded that the Langley Federal Credit Union is conducting business from two locations. The Gate House at NASA's main West Gate (Gate 4) houses loan personnel and tellers. Go there for share withdrawals, to make a payment, to apply for a loan, or to pick-up a check. All other personnel are located on the second floor of Building 1192 on Stratton Road. Turn right where most East Area members formerly did to go to the old building but keep straight ahead for two blocks. Building 1192 sits in a jog of Stratton Road. Go there for information on your account, to clear the base, or to arrange for an extension.

It is hoped that this split operation will be short lived. A contract has been signed with the well-known firm of Rancorn, Wildman and Krause to supply the architect and engineering services involved in the construction of a new credit union building. With luck, ground-breaking will take place about the middle of June with occupancy some four months later. In the meantime, call Air Force extension 2604 or NASA 4607 to submit a loan application (provided a supporting document such as a Commander's Letter is not needed) and mail payments/share deposits in.

FOR SALE: 3-bedroom brick home with garage in Fairfield. Duggan, 851-2245.

FOR SALE: 1954 Rambler hardtop. May, PA 3-5327.

WANTED: Driving combination from Portsmouth to E.A. on 8 shift. Guess, 2244 or Portsmouth EX 9-7271.

WANTED: Ride from Hilton to W.A. on 8 shift. Taylor, 3254.

WANTED: Fifth driver from Southampton to W.A. on 8 shift. Blackwell, 2631.

FOR SALE: 1956 Pontiac Star Chief, 4-door, V-8, new automatic transmission - $300. Roch, 596-8378 after 6.

FOR SALE: Chesapeake Bay Retriever pups. Hubbard, 596-7041.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 4, NUMBER 10 LANGLEY RESEARCH CENTER MAY 21, 1965

SLOGAN AND SYMBOL CONTEST DEADLINE SET FOR NEXT FRIDAY

All entries for Langley's contest to select a NASA cost reduction symbol and slogan must be submitted by May 28. The Incentive Awards Committee will judge entries--which will have been rendered anonymous--during the first week of June.

Dr. Floyd L. Thompson, Director, has authorized U.S. Star Spangled Savings Bonds in the following denominations as prizes: A $500 bond will be awarded for a single entry which contains both a winning slogan and a winning symbol. If a single entry is not judged a winner for both symbol and slogan, two winners will be selected, one for the winning slogan and one for the winning symbol. Each of these winners will be awarded two $75 Star Spangled Savings Bonds. Four $25 bonds have been authorized for runner-up prizes if the Incentive Awards Committee determines there are entries eligible for this consideration.

(Continued on page 5)

Lou Martin (center), Business Manager of the Peninsula Grays baseball team, met with members of the Executive Board of the Activities Association to discuss special plans for a NASA Night at the Peninsula Memorial Stadium. Tonight is the night and the Peninsula Grays will meet Winston-Salem at 7:45 p.m. Tickets, which are normally one dollar each, may be purchased from District Representatives for 50 cents for adults. Children under 15 will be admitted free. District Representatives are requested to turn in their money and tickets to John Wharton, Activities Building, by the close of business today. Shown above with Martin are (clockwise): Bruce Amole, Virginia LaPrade, Betty Tholl, Linda Johnson, Herbert Pelton, president of the Activities Association; Martin, Ray Goodman, Chairman of the Activities Committee; Dick Kurtz, Humbert Rockey, Herbert Boulter, and Alfred Voitlein. Francis J. "Stumpy" Howard, Percy R. Keffer, and Marvin Forrest, members of the old NACA Championship Baseball team in 1927, will be on hand to participate in the evening's activities.

ACTIVITIES ASSOCIATION TO CONDUCT BOND DRIVE

The 1965 U.S. Savings Bond Drive, entitled Star-Spangled Savings Plan, will be conducted by the Langley Activities Association. Its President, Herbert J. Pelton, has been appointed to act as Chairman.

Herbert J. Pelton

The enthusiastic acceptance of this responsibility by the Activities Association was based on the belief that every Center employee can develop an independence from financial worry and at the same time support our nation through participation in the Payroll Savings Plan.

The plans for the remainder of the campaign include:

1. A personal canvassing of Center employees to enlist new participants and to encourage those already participating to increase their U.S. Savings Bond investments.
2. An inducement to encourage additional participation by given away two (2) $25 U.S. Savings Bonds.
3. A publicity program to inform Center employees of the benefits derived from payroll savings.

The immediate goals of the District Representatives are to enlist 1441 new participants and to increase the total Langley Research Center payroll savings to $75,000 a pay period. Once these goals are attained Langley will not only be a NASA leader in bond participation but will also be a Tidewater leader in securing financial independence for its citizens and in making our nation and its economy secure. The goals are high but not impossible. Their attainment is based on you.

The representative will present you with the facts enabling you to derive the benefits of convenient, effortless, regular, and safe savings offered through the Payroll Savings Plan. He asks only that you listen and decide on one major issue, "Is your's and America's future well-being worth an investment of $1.88 per week by you?"

The campaign has been in progress for one week and has

(Continued on page 4)

DAYLIGHT TIME STARTS JUNE 6

Effective at 12:01 a.m. on Sunday, June 6, clocks will be moved forward one hour in those sections of Virginia which did not convert to Daylight Saving Time in April.

This includes the Peninsula area and consequently, the Langley Research Center will operate on Daylight Saving Time from June 6 to Labor Day (September 6).

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, Building 587, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer..... Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEWLY WEDS. . .Richard M. McCraney, Aero-Physics Division, took his final vows with Marilyn Hughes, Pensacola, Florida, on May 1 in the Richards Memorial Methodist Church in Pensacola. . .Patricia Roberts, Space Mechanics, was married May 3 to Charles Thomas Webster, Langley Air Force Base. . .Wedding bells rang when Mary John Plemmons, Scout Project Office, took her final vows with Bo Johnson, Ft. Worth, Texas, on May 9 in Richmond.

DIAPER LINE. . .Bernice Walker, Personnel Division, became the mother of a daughter on May 7. . .Celebrating the birth of a daughter on May 1 are Margaret, formerly of Scout Project Office, and Snowden Mills, Mechanical Service Division. . .Weighing in at seven pounds on May 12 was Amy Carol, daughter of Mary, formerly of Mechanical Service Division, and Ramon Barr, Mechanical Service. . . Announcing the birth of a daughter on May 4 is G. Louis Smith, Applied Materials and Physics Division.

ENGAGEMENT. . .Making plans to desert the bachelor ranks is Woodrow Wilson James Jr., Light Machine Shop. He is engaged to Nancy Sadler, Mathews, and plans call for a September wedding.

TENNIS NOTICE. . .Employees interested in having their names placed on the Langley tennis directory should send their name, NASA extension, home address and home telephone number to A. W. Mueller, Mail Stop 239. Interest in ladder competition, mixed-doubles play or intradepartmental tournaments should also be indicated.

SUMMER BOWLING. . .Teams or individuals interested in a Summer Mixed Tenpin Handicap League to bowl at Century Lanes should contact J. B. Lovell, 3521 or 851-1935, by May 27. Bowling time will be at 8 p.m. on Tuesdays. Teams will have four members each and the season will run for nine weeks.

FOUND: Approximately 1400 Federal employees at Langley not deriving the benefits of the Payroll Savings Plan.

FOR SALE: 4-bedroom, 1-1/2-bath house on 90 x 210-foot lot, fenced backyard. Pinckney, 596-1152.

FOR SALE: Living language course in French with 4 long playing records, dictionary and exercise book - $3. Bob Thomson, 596-2832.

FOR SALE: U.S. Savings Bonds through the Payroll Savings Plan. Allotments can be changed, stopped, or increased at any time.

What of major significance is missing in this picture? See Page 5 for the answer.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of May 24:

Monday - Tomato barley soup, Spanish pot roast, grilled pork chops, fried fish sticks, tamale pie.

Tuesday - Chicken noodle soup, roast leg of lamb, barbecued pork chunks over rice, fried chicken, western omelette.

Wednesday - Puree of bean soup, roast ribs of beef, grilled Canadian bacon, veal birds with cream sauce, barbecued sandwich.

Thursday - Vegetable-beef soup, grilled steak, fried scallops, stuffed pepper, franks and beans.

Friday - Clam chowder, hot roast beef sandwich, salmon-cheese loaf, fried fish, Austrian ravioli.

The menu for the week of June 1 is as follows:

Monday - HOLIDAY

Tuesday - Cream of tomato soup, half-pound chopped steak, fried shrimp, baked ham, chili con carne.

Wednesday - Chicken-vegetable soup, Swiss steak, roast fresh ham, fried chicken, cheese ravioli.

Thursday - Vegetable-beef soup, grilled steak, pork chow mein with rice or noodles, meat loaf, fish cakes.

Friday - Clam chowder, roast beef, fried oysters, broiled fish, hamburger.

FOR SALE: Power mower, reel-type, $10. Goble, 596-5176.

FOR SALE: 1954 Jaguar XK120. Call, PA 3-5636.

FOR SALE: Yashica D twin lens reflex camera and accessories - $35, G.E. 20-inch 3-speed reversible fan - $15. Teichman, 596-4562.

FOR SALE: 5-bedroom, 1-1/2-bath house on 90 x 200-foot lot, near Jane Bryan School, $19,900. Walker, PA 3-3079.

FOR SALE: 25-foot deluxe runabout with 185 hp Chris Craft motor. Priddy, PA 3-5148.

TEN STAFF MEMBERS APPOINTED TO AIAA TECHNICAL COMMITTEES

Ten members of the Langley Center staff have been selected to serve on the technical committees of the American Institute of Aeronautics and Astronautics. According to an AIAA official, these committees are the technical backbone of the AIAA and membership in them indicates the individual's eminence in his professional specialty.

The committee members and the committees they have been selected to serve on are as follows:

Stanley H. Scher, Flight Mechanics and Technology Division, Aerodynamic Deceleration Systems; Donald D. Baals, Assistant Chief of Full-Scale Research Division, Aircraft Design; William Hewitt Phillips, Chief of Space Mechanics Division, Atmospheric Flight Mechanics; Eugene S. Love, Assistant Chief of Aero-Physics Division, Chairman of Entry Vehicles; Robert V. Hess, Head of Plasma Physics Section, Aero-Physics Division, Electric Propulsion; John P. Reeder, Assistant Chief of Flight Mechanics and Technology Division, Flight Testing.

Eugene C. Draley, Assistant Director for Flight Projects, Launch Vehicles and Missiles; Macon C. Ellis, Head of Magnetoplasmadynamics Branch, Aero-Physics Division, Plasmadynamics; I. Edward Garrick, Chief of Dynamic Loads Division, Structural Dynamics, and Dr. Samuel Katzoff, Senior Staff Scientist, Office of Associate Director, Thermophysics.

AIAA TO HEAR DOWNING

Thomas N. Downing, Congressman of the First District of Virginia, will be guest speaker at the annual dinner-dance of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics on Friday, May 28 at the Roof Garden, Chamberlin Hotel.

The program for the evening will include a social hour at 6 p.m., dinner at 7, the business meeting at 8 and dancing from 9 until midnight.

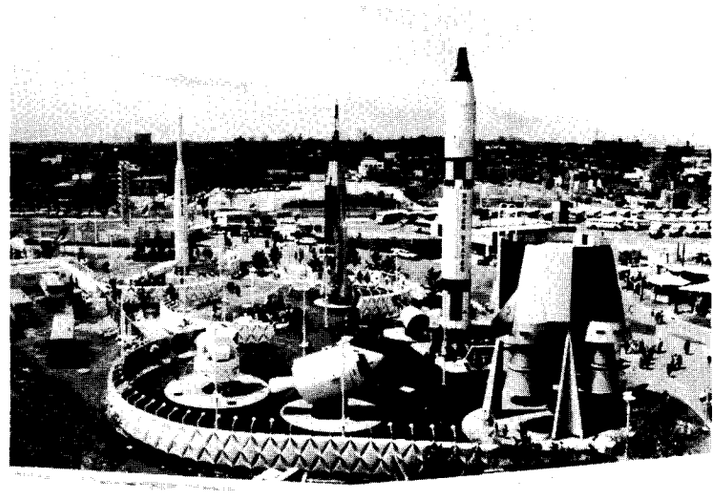
Representative Downing will speak on "Congressional Aspects of the Aero-Space Program."

Downing was born February 1, 1919 in Newport News. He graduated from Newport News High School and received his B.S. degree from Virginia Military Institute and his law degree from the University of Virginia. He served in World War II as a combat troop commander of Mechanized Cavalry with General George S. Patton's Third U.S. Army and commanded the first troops in the Third Army to invade Germany. He received a Silver Star for gallantry in action in France.

Downing was elected to the 86th Congress on November 4, 1958 and is a member of the Committee on Science and Aeronautics, the Committee on Merchant Marine and Fisheries, the Subcommittee on Merchant Marine and the Special Subcommittee on Steamship Conferences.

Reservations for the dinner-dance may be made by calling L. W. Enderson, 596-6702, H. G. Wiley, 596-4427, or W. H. Michael, 595-0463, by noon on Wednesday, May 26.

FOR SALE OR TRADE: 1965 442 Oldsmobile - high performance package. Drew, 851-2669.
FOR SALE: 1957 Rambler, 4-door sedan, new tires, 50,000 miles. Gregory, 596-0667.



U.S. Space Park, the most extensive display of full-scale rockets and spacecraft outside Cape Kennedy, is sponsored at the New York World's Fair by NASA, the Department of Defense, and the World's Fair. Highlighting the park is a full-scale "boattail" or propulsion section of the massive Saturn V rocket (right) which will send American astronauts to the Moon. The model stands 52 feet tall, measures 33 feet in diameter, and is the bottom section of the 282-foot tall Saturn V. Towering over the two-acre exhibit is a Titan II-Gemini-launch vehicle (left of Saturn) and its two-man spacecraft. The Titan II booster, 110 feet high, stands with the Gemini capsule attached on top just as it will be on the launch pad at Cape Kennedy. In the foreground and to the left of the Saturn boattail are: (1) the Apollo Command and Service Modules which will carry American astronauts to the Moon, and (2) the Lunar Excursion Module. The two-man Gemini spacecraft is just left of the Titan II-Gemini-launch vehicle. Other full-scale exhibits in the park are the Atlas-Mercury and Thor-Delta rockets, an X-15 rocket-powered research aircraft (left) and the Agena rocket. Models of many other U.S. satellites are also on display at the park.

IAM MEETING NOTICE

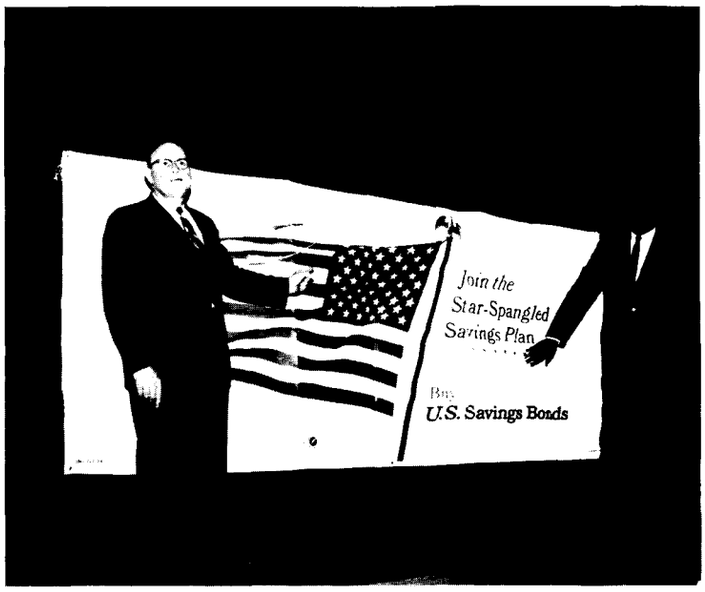
The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, June 1 at 7 p.m. at the Central Labor Union Hall, Newport News.

NASA JOB OPPORTUNITIES

The Office of Advanced Research and Technology, NASA Headquarters, has asked for names of possible candidates for a position in its Technical Publications Branch. The position requires a technical background and the grade would range from GS-12 to GS-14.

The Langley Personnel Office has occasionally asked for assistance in filling staff-type positions both at Headquarters and Langley. Employees possessing technical backgrounds and desiring consideration for such positions should furnish their names to John Cox, Employment Office, extension 2233.

FOR SALE: 3-bedroom, 1-1/2-bath brick rancher on 100 x 350-foot lot in York County, $17,900. Bieri, 877-0515.
WANTED: Driving combination from North Mallory to W.A. on 7:30 or 8 shift. Edwards, 4875.
FOR SALE: Four 6.70 x 15 tires, $35. Wetterling, LY 62063.



Bruce Challen (left), U.S. Savings Bond State Director for the Treasury Department, and Herbert Pelton, Langley's Bond Chairman, display the symbol for the Star Spangled Savings Plan at the kick-off session of the 1965 Bond Drive. The kick-off meeting was held May 13 at the Activities Building.

ANNUAL BOND CAMPAIGN STARTS

(Continued from page 1)

enabled the representatives to make initial contact with the employees. The campaign will end May 28, which gives each employee one more week to make this the most successful bond campaign conducted by Langley Research Center.

If your District Representative has not contacted you, please see him. The representative is not asking you to buy for or give to some charitable cause. He is, however, asking you to join with approximately 3,000 of your fellow employees in taking some of your paycheck home in U.S. Savings Bonds. Yours is the vital job because only you will determine the success of Langley Research Center's Bond Program.

ATTENTION ALL POKER PLAYERS: Have you ever had any luck drawing to an inside straight or trying to fill a flush? Sign up for your Savings Bond today and you'll always have an ace in the hole.

FOR SALE: Whizzer bicycle, motor needs repairing - $15. Regone, 244-3642.
FOR SALE: Three-bedroom brick rancher on wooded lot in Hidenwood. Hastings, LY 6-8185.
FOR SALE: Four pieces of Blossom Time silver by International. Hudgins, 245-8676.
FOR SALE: New 3-bedroom house in Apple Acres - off Mallory Ave. Thomas, 723-4042.
FOR SALE: G.E. air conditioner, 85,000 btu, 115 volts - $100; Fedders air conditioner, 6000 btu, 115 volts - $65. Jarrett, 596-4278.
WANTED: Home for kittens. Eggers, 595-1686.
FOR SALE: 24-foot vacation trailer, $1500. Cochrane, PA 3-3518.

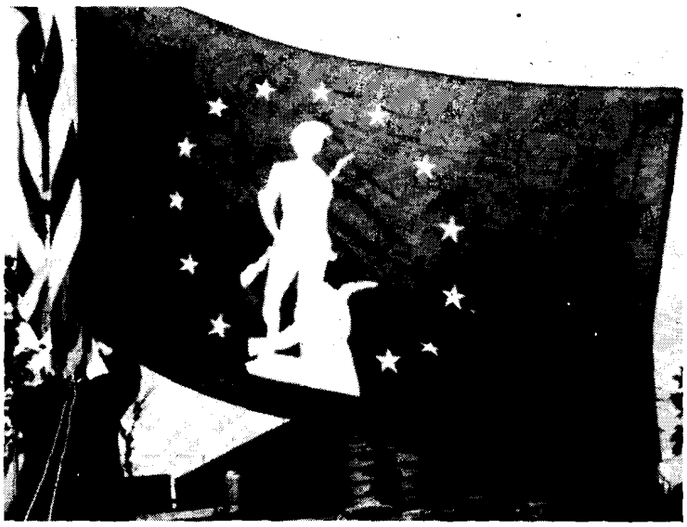
DIVISION BOND STANDINGS

Division	Subscribers	Non-Subscribers
Office of Director	31	7
Research Reports	39	15
Off. Asst. Dir., Flight Projects	78	54
AMPD	132	119
Analysis and Computation	102	70
Instrument Research	246	220
Space Mechanics	58	34
Dynamic Loads	85	60
Structures Research	114	45
Aero-Physics	115	80
FMTD	102	32
Full-Scale Research	115	76
Off. Eng. and Tech. Services	47	10
Electrical Systems	223	60
FVSD	106	43
Mechanical Service	688	264
Plant Maintenance	142	44
RMFD	121	55
Off. Asst. Dir. for Admin.	23	9
Administrative Services	58	33
Fiscal	79	31
Personnel	49	8
Photographic	66	19
Procurement	117	53
TOTALS	2,936	1,441

ATTENTION ALL GOLFERS: Tired of always being "in the rough?" Ever wonder what it would feel like to be "down the middle" every time? Sign up for your Savings Bond today and you'll never have to worry about "roughing it" again.

WANTED: American patriots who believe enough in their country to support it in peace time as well as in war through the Payroll Savings Plan.

BLONDE WITH BONDS - Sophia Freire will present on behalf of the Activities Association two $25 Star-Spangled Bonds to participants in the 1965 Bond Program. Recipients of the bonds will be by a name drawing - one bond to a new participant and one to a participant increasing his investment. All entries must be dated no later than July 17, 1965.



ANSWER to question on Page 2. The Treasury Department's "Minute Man" Flag designating Langley Center as a leader in the U.S. Savings Bond Program which was last visible after the 1952 campaign. Bring it back through your participation in our Payroll Savings Plan - it takes 90 percent employee participation.

SLOGAN AND SYMBOL CONTEST

(Continued from page 1)

The Director selected U.S. Star Spangled Savings Bonds as prizes for this contest to tie-in Langley's Savings Bond Drive with the Cost Reduction Program, both of which are currently receiving top attention in government circles -- one stimulating personal savings and one stimulating savings in government operations.

Dr. Thompson stated that this contest will be of value in furthering the Center's cost reduction efforts by creating a greater awareness among staff members of the continuing need for economy in all of the Center work. He asks each employee to submit ideas for slogans and symbols for cost reduction.

Submit entries during this last week of the contest to the Incentive Awards Office, Mail Stop 124. In addition to the prizes to be awarded by the Center, local winners will compete for the agency's prizes of $500 for both the winning slogan and winning symbol or a total of $1000 if the winning slogan and symbol are submitted as one entry.

LOST: One barely used Treasury E Flag. Last seen at the Center about 13 years ago. Reward for personnel assisting in recovery of same. Contact your District Representative for details.

FOR SALE: Frigidaire dehumidifier. Limburg, 596-9167.
FOR SALE: 1955 Plymouth - $100. Evans, 898-5004.
FOR SALE: Blue sheath evening dress with white laced, appliqued top, size 9. Hogge, 143 Church Rd., Poquoson.

FOR SALE: Complete 2-bedroom house with stove, refrigerator, heating system, bath, shrubs, storm windows. Total cost $350. Clem, PA 2-2146.
FOR SALE: G.E. portable TV. Newman, 722-2062.
FOR SALE: 14-foot mahogany boat, 40 hp Johnson motor, trailer, skis, etc. - $750. Wagner, 877-1216.
FOR SALE: 14-foot Cutlass sailboat. Regone, 244-3642.

U.S. AND AUSTRALIA WILL TEST ASTRONAUTS' VISION FROM ORBIT

Australia and the United States will cooperate in a project to determine scientifically how well astronauts can see the Earth and objects on the Earth from an orbiting spacecraft.

The scientific program of some future Gemini flight will include an experiment to shed light on this subject, which has been of interest to scientists since several astronauts in orbit reported seeing surprising detail on the Earth.

Main objective of the experiment will be to measure the cut-off point in recognizing objects on the ground as they are displayed in progressively smaller fashion, much as an ordinary eye chart uses lettering of decreasing sizes.

Australia has agreed to provide a site in Western Australia which is well suited to Gemini flight paths in the Southern Hemisphere, providing a sufficient number of sightings for the results to be statistically significant. A similar Northern Hemisphere area is being prepared 40 miles north of Laredo, Texas.

Flat plots of land in a semi-arid region are required for such an experiment so that cloud-cover interference is less likely. The terrain needs to be either barren of vegetation or easily cleared. The plots will range in size from a mile or more wide to several miles long.

Each plot, or strip of land, will be divided into a number of squares with some of the squares containing markings for use in the sighting experiments.

The shapes, or markings, presented for viewing by the astronauts will be of a white material, such as sea shells, spread on the ground. The markings will have varying sizes and orientations or positions.

The astronauts will be asked to report the number and orientation of the markings they can observe. The astronauts also will be repeatedly checked in flight with an onboard device to test their brightness discrimination, contrast threshhold and visual acuity or sharpness.

As the flight continues, the several tests will help determine how the visual capability of the astronauts is affected by prolonged weightlessness, breathing pure oxygen, breathing under a pressure of five pounds per square inch, and other in-flight stresses.

The experiment for testing visual perception in space will have as its principal investigator on behalf of NASA, S. Q. Duntley, director of the Visibility Laboratory of the Scripps Institute of Oceanography, University of California, LaJolla.

FOR SALE: 1963 Ford Galaxy 500, $1995. Smith, 596-6546.
FOR SALE: 30 ft. of bronze wire screen. Gillis, LY 6-5938.
FOR SALE: Motorola transistor car radio. Bright, 723-8775.
WANTED: Fifth driver from Bloxom's Corner, Hallwood, to W.A. on 8 shift. Midden, 4871.
FOR SALE: 1965 Honda super sport 50. Shaw, 826-7277.
FOR SALE: 1957 Ford ranch wagon, automatic transmission and power steering - $300. Andleton, 826-2083.
FOR SALE: 1961 Skyliner mobile home, 2 bedrooms, size 51 x 10 feet. Moore, 826-6986.
FOR SALE: 13 cubic foot Frigidaire refrigerator. Wood, LY 6-3445.
FOR RENT: 7-room house on large lot near Hampton High School. Stove and refrigerator furnished. James, 838-1298.

AMERICA LEADS IN SPACE PROBES

About two-thirds of the world's 325-odd satellite and interplanetary probe launches were accomplished by American scientists and engineers, according to NASA. The scientific data collected by space vehicles is greatly extending many of the natural sciences, bringing answers to questions which have perplexed mankind from the earliest days of human existence on earth.

Here are some examples of new knowledge gained and discoveries made by the more than 220 scientific satellites and space probes of the United States.

The earth has been found to be slightly pear-shaped, with the "stem" portion at the North Pole. The information, as well as the technology that discovered it, will prove useful for more accurate mapmaking and navigation.

Sunlight exerts pressure on objects in space. This pressure shifted the orbit of the grapefruit-size Vanguard I satellite about a mile per year and has affected the orbit of the Echo I balloon at a rate 300 times greater.

A "solar wind" of charged particles is flowing through space from the sun, apparently compressing the earth's magnetic field on one side and blowing it out on the other.

The uppermost regions of the atmosphere consist chiefly of hydrogen. Below this region is a layer in which helium predominates. The presence of these lighter elements in large quantities has an important bearing on the design of both aircraft and spacecraft that will traverse this region.

Cooperative work by a NASA-funded team at the University of Minnesota and by a group at Goddard Space Flight Center proved that radiation hurled through space from a large solar flare not only has important effects on earth, but undoubtedly would be fatal to the crew of a spacecraft unless they were provided with special shielding.

The same studies, however, demonstrated that enough shielding could be built into the Apollo spacecraft to protect its occupants.

These other results of space science investigations by NASA foreshadow the extensive and accelerated progress that the future holds. For the near future, NASA is planning:

An Advanced Orbiting Solar Observatory (AOSO) that will study the sun and its radiation, and in the process pick up important basic facts about the entire universe.

An Orbiting Astronomical Observatory (OAO), over nine feet tall, four feet wide, and weighing 3,600 pounds when filled with instruments, will be launched late this year.

From a vantage point 500 miles in space, it will probe the universe with special telescopes (one with a 16-inch reflector), furnishing a strikingly different picture of space and its contents.

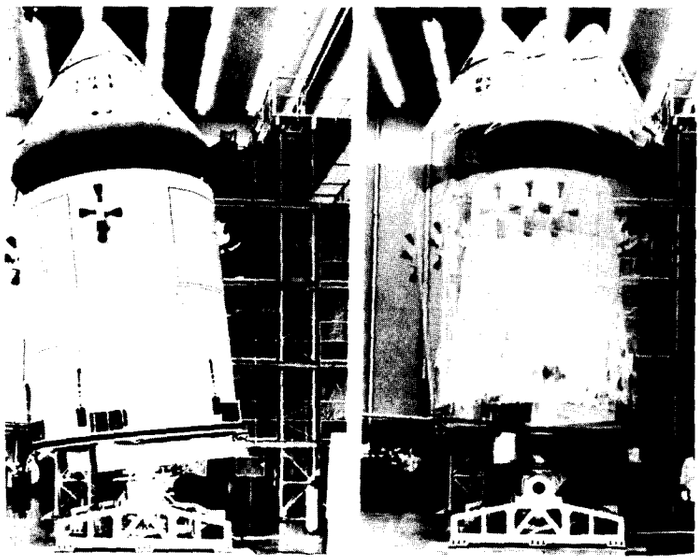
NASA's plans for further lunar and interplanetary exploration include the following instrumented craft:

Surveyor, to develop the technology for landing gently on the moon (or a planet) and provide pictures of the moon-shape, and information about the solidity of the lunar surface.

Lunar Orbiter, to develop the technology for going into orbit around another celestial body, map the moon, and delineate its size, shape, and gravitational pull.

Other spacecraft under study may be sent into orbit around Mars or Venus to gather information and possibly to drop instrumented capsules to the planetary surface in search of indications that life in some form exists or has existed there.

These instrumented devices will blaze a trail for eventual manned journeys to the moon and planets by contributing to the required technology and providing vital information about the conditions through and toward which man will travel.



The Apollo spacecraft gets rock 'n roll treatment atop a polarity checker. The treatment is so rugged the rocker even rocked the camera some distance away. The rocker tests guidance and navigation units going aboard the Apollo vehicle. The polarity checker, at the Downey, California, plant of North American Aviation, Inc., includes rocking, on which the Apollo lunar spacecraft sits, and associated electronic equipment to measure responses of gyroscopes. Rocker can lean six degrees to right or left, in addition to providing pitch, yaw, or roll motions.

LEE NAMED NASA CONSULTANT

John G. Lee, pioneer aircraft designer and former director of research for United Aircraft Corporation, has joined the NASA as a part-time consultant.

Lee, who lives in Farmington, Conn., will advise the NASA Administrator on various aeronautical problems with special emphasis on how to maintain individual creativity in the aeronautical research being carried out at NASA's research centers.

A Chicago native with bachelor and master's degrees from Massachusetts Institute of Technology, Lee was one of six men who designed the Ford Trimotor airplane in the mid-twenties.

He joined the Chance Vought division of United in 1932 and was serving as research director when he retired in 1964.

Since 1922 he has served on various technical committees of government agencies and professional societies. He is a member of NASA's Advisory Committee on Aircraft Aerodynamics.

WANTED: Fifth driver from Southampton area to W.A. on 8 shift. Keith, 4581.

FOR SALE: Hacker 26-foot speed boat with Cadillac Crusader engine, 18-foot boat with 25 hp inboard engine, and 1964 Ford travel wagon. Thomas, OX 3-6523 Gloucester.

NASA BOWLING LEAGUES

Mexicali Restaurant leads Group A in the NASA Tenpin League with 87 wins and 41 losses. Flyers follow in a close second with 85 wins and 43 losses. Top bowler for the week was Henry Lee with a 232 game and 622 set.

Barristers lead Group C with 88 wins and 40 losses. The Question Marks are in second with 85 wins and 43 losses. Top scores were rolled by Maynard Sandford with a 255 game, Wallace Nelson with a 632 set, Pat Poslik and Peggy Mayo with a 210 game each and Jane Oehman with a 592 set.

GROUP A

Mexicali	87	41	Electronic Shop	62	66
Flyers	85	43	Short Circuits	57	71
Alley Cats	81	47	Hornets	55	73
Phantoms	73	55	Payloads	46	82
Unitary	72	56	Devious	43	85
Frame Ups	70	58	Raiders	37	92

GROUP C

Barristers	88	40	Gliders	62	66
Question Marks	85	43	Dopesticks	60.5	67.5
Analogs	83	45	Strike Outs	59	69
Greenhorns	72	56	Spare Parts	53	75
ACD	71.5	56.5	Lunar Tics	49.5	78.5
Dillys	66	62	Bowling Belles	43	85
Alley Oops	64	64	Mets	39.5	88.5

ATTENTION: RESERVISTS

The following excerpt from DOD Directive 1215.6, dated January 16, 1965, is of immediate importance to all employees who are members of the Military Ready Reserve. A copy of this Directive is available in the Employment Office. For information, those interested may call Jane Swartzwelder, 2568 or 2272.

This Directive permits NASA employees who are transferred to the Standby Reserve because they are designated key employees, or who voluntarily transfer to the standby reserve, to continue to earn retirement credit.

"The following members of the Standby Reserve may be permitted to participate voluntarily in reserve training for promotion and retirement points.

1. Personnel who have not fulfilled their statutory military service obligations.

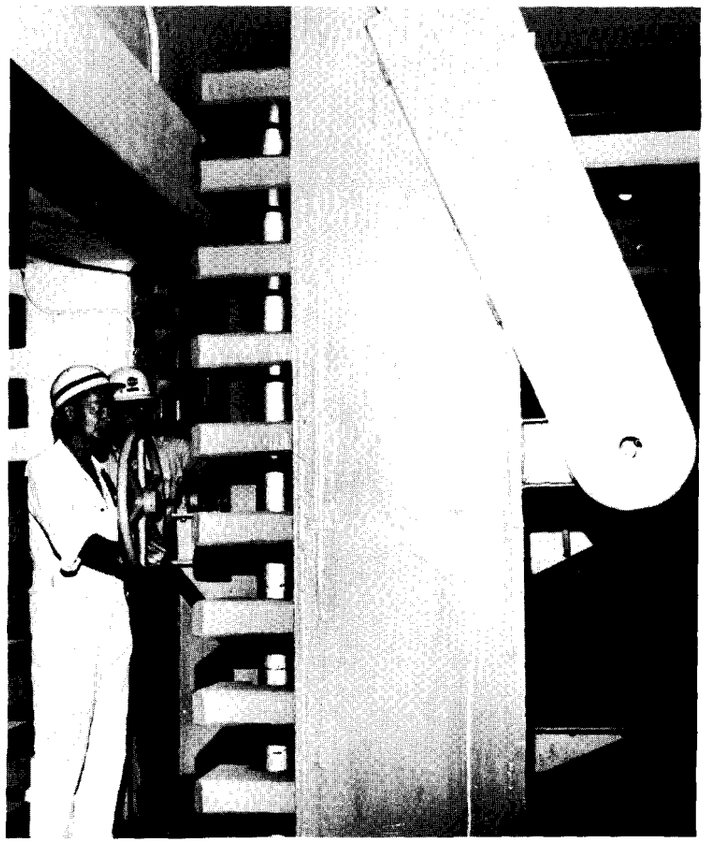
2. Personnel who qualify for retention in an active reserve status under the provisions of Section 1006, Title 10, USC.

3. Personnel now in the active Standby Reserve or who were transferred from the Ready to the Standby Reserve after January 16, 1965. Persons transferred to the Standby Reserve after June 30, 1965 will not be permitted to participate in reserve training for promotion and retirement points unless they qualify under 1 or 2, above.

Standby Reserve Members who participate shall be placed in appropriate training categories. They will not be entitled to pay and allowances, including travel and transportation allowances for such training."

LOST: Gold Timex watch with Speidel band. Corbitt, 2553.
WANTED: Used trumpet in good condition. Stalnaker, 877-2616.

FOR SALE: Guaranteed Savings Bonds which will put your savings dollars to work keeping America strong and provide you with security for the future.



Should the U.S. gold reserve ever overflow from Ft. Knox, the government might consider storing it in the Launch Complex 37 where Saturn rockets are launched from Cape Kennedy. The complex's blockhouse features this 10-ton, 20-inch thick steel door that dwarfs vault doors in even the largest banks. Supported by two six-ton monorails, the huge frame is placed in position to seal up the blockhouse during the countdowns on Saturn I launches. A gas seal around the edges keeps fumes from entering. Once it is in place and sealed, the safety of more than 300 men inside the blockhouse is assured. The door is 8 feet, 8 inches high and 10 feet, 4 inches wide.

COURSES OFFERED STAFF

Depending upon the need and requests from graduate students, the following courses will be offered at the Langley Center during the summer months.

University of Virginia - MA 501, Advanced Engineering Mathematics I, D. L. Lansing, instructor; AM 513, Energy Principles in Mechanics, Dr. R. E. Fulton, instructor, and AM 604, Theory of Shells, Dr. J. N. Rossettos, instructor.

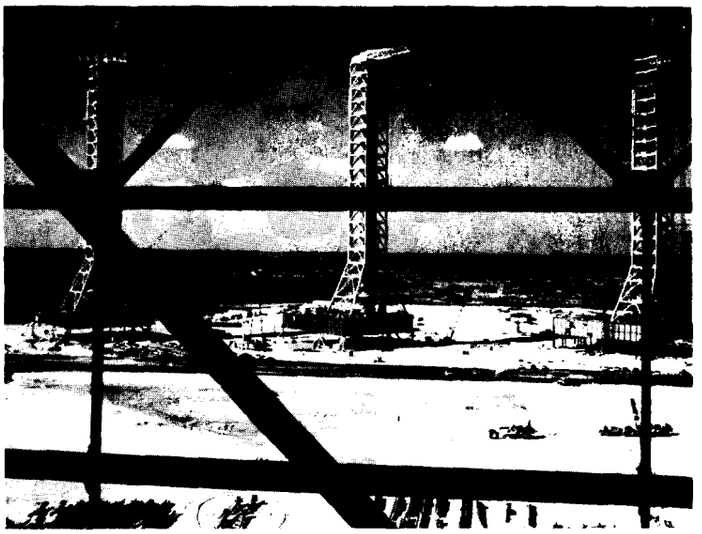
Virginia Polytechnic Institute - Math. 506, Advanced Vector Analysis, W. R. Wells, instructor.

Employees interested in enrolling in these courses should call the Training Office, 2611, as soon as possible.

The University of Virginia Extension is offering a three-semester-hour course in Analytical Geometry - Introduction to Calculus. The class will meet on Saturdays at 9 a.m. in Building 1348 and the first class will be held on June 5.

For further information call Kenneth Margolis, 2559.

FOR SALE: 2-bedroom split-level in Brentwood - $800 and assume loan. Eichelberger, 596-2384 after 5 p.m.



Artistically framed through the structural steel work of the Vertical Assembly Building on Merritt Island, Florida, are three mobile launchers that will help send NASA's Saturn V Apollo moon rockets on their way. The tower at right is being topped out as its huge hammerhead crane is lifted to its crown. The structures are 445 feet high. With each launcher topped off, ground support equipment and electrical apparatus are now being installed with completion set for December, 1966.

MOON RESOURCES STUDY PLANNED

NASA has awarded a $300,000 grant to the Department of Interior's Bureau of Mines for a three-year research program on the potential use of lunar materials to support manned exploration of the Moon.

The long-range goal of the Bureau's Minneapolis Mining Research Center is to develop a technology for the most efficient use of extraterrestrial materials by lunar explorers.

The research team will study the possible production, processing and uses of materials on the Moon for the construction, supply and operation of manned lunar bases. Scientific findings from NASA's unmanned lunar programs will be used in their studies.

The studies will seek to learn how lunar resources could be used by manned exploration missions for shelter from solar heat and radiation and as a source for fuels for vehicle propulsion. The team will seek to learn how these resources could be mined and transported from one location to another on the Moon and how the material reacts to the changing lunar environment.

The program will be carried out under the direction of Thomas C. Atchison, Assistant Director of the Bureau's Minneapolis Mining Research Center.

The research team will include engineering experts in mining, geology, chemistry, physics and materials. Faculty consultants and graduate students from the University of Minnesota will aid the team as part of the Bureau's program to develop future capabilities at educational institutions.

The Minneapolis Center was selected from among seven institutions which submitted proposals. Selection was made by a panel representing NASA, the U.S. Geological Survey and the Office of the Chief of Engineers.

Members of the panel are: James J. Gangler, Research Division, Office of Advanced Research and Technology, NASA, chairman; Donald A. Beattie, Advanced Manned Missions, Office of Manned Missions, Office of Manned Space Flight, NASA: Robert P. Bryson, Acting Chief of Planetology, Office of Space Sciences and Applications, NASA; E. T. C. Chao, Geological Survey; and George G. Quarles, Scientific Advisor, Office of the Chief of Engineers.

THE NATIONAL DRIVERS TEST

OFFICIAL TEST FORM

A. JUDGMENT

Defensive Driving Techniques

circle correct letter

SCORE

1. a. b. c. d. . . . ☐
2. a. b. c. d. . . . ☐
3. a. b. c. d. . . . ☐

B. KNOWLEDGE

Rules of the Road:

circle **T** *[true] or* **F** *[false]*

SCORE

1. T. F. . . ☐
2. T. F. . . ☐
3. T. F. . . ☐
4. T. F. . . ☐
5. T. F. . . ☐
6. T. F. . . ☐
7. T. F. . . ☐
8. T. F. . . ☐
9. T. F. . . ☐
10. T. F. . . ☐
11. T. F. . . ☐
12. T. F. . . ☐
13. T. F. . . ☐
14. T. F. . . ☐
15. T. F. . . ☐

C. PERCEPTION

Hazards Alertness

1. List the number of driving hazards you have seen

NUMBER ( ) SCORE ☐

D. SPECIAL

circle correct letter

SCORE

1. a. b. c. d. . . . . ☐
2. a. b. c. d. . . . . ☐

TOTAL SCORE ☐

FIND OUT HOW GOOD A DRIVER YOU REALLY ARE. Keep this test form and take part in an extraordinary CBS News broadcast, "The National Drivers Test," on May 24, from 10 to 11 p.m. over the CBS Television Network. This broadcast, first of its kind, uses spectacular photography to test your driving judgment - right in your living room. You watch high-speed head-on collisions, staged by experienced stunt drivers, as they develop and occur. In another dramatic part of the test, you are again in the driver's seat. As you drive, you are faced with a number of potentially serious driving hazards and asked: "How many did you spot?" You answer interesting questions like this as you watch the broadcast. You'll be shown the correct answers and be given an opportunity to compare your answers and score with those of typical drivers in other parts of the country. "The National Drivers Test" is produced by CBS News in cooperation with the National Safety Council and is promoted locally by the Greater Tidewater Chapter of the American Society of Safety Engineers. This program is becoming very popular nationally and all available official test forms have been distributed. Langley Researcher is reproducing it here so that Langley employees may have a copy and take part in the test.

FOR SALE: One share of stock in Riverdale Recreation Association. Jones, 838-1765.

WANTED: Lot or acreage within 30 minutes of Langley Field. Farnsworth, PA 2-8059 after 8 p.m.

WANTED: Ride from Shell Rd. and LaSalle Ave. to W.A. on 7:30 shift. Iley, 4731.

WANTED: Ride for gentleman to San Francisco, Calif., or nearby area as soon after June 1 as possible. Will share with driving. Robins, 826-3831 after 4 p.m.

Langley Researcher

VOLUME 4, NUMBER 11 LANGLEY RESEARCH CENTER JUNE 4, 1965

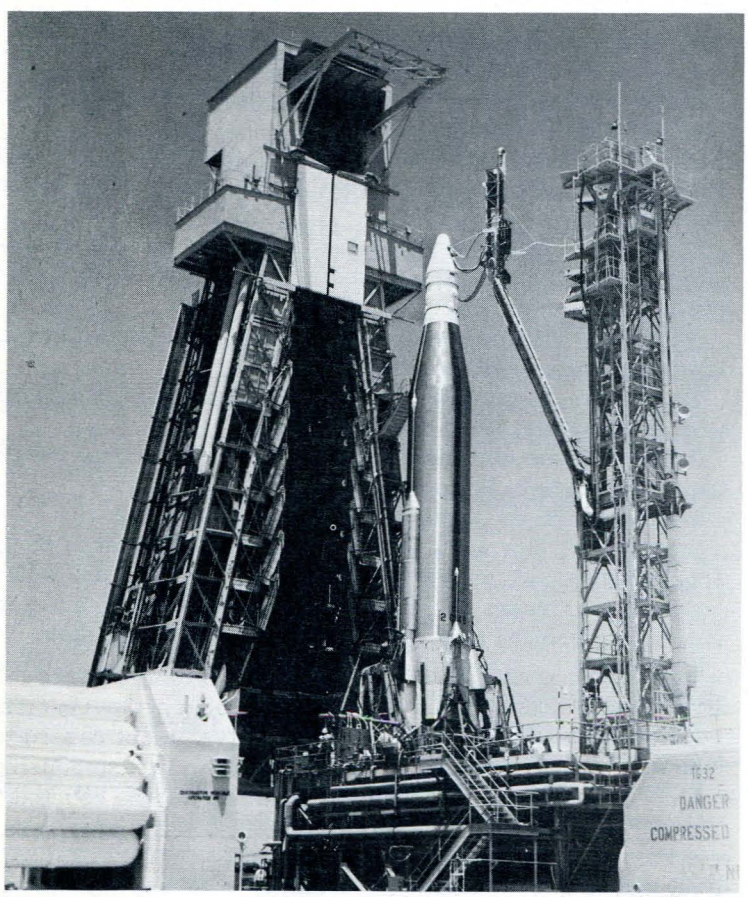
500 ENTER NASA CONTEST

Approximately 500 entries were received at the Center in the NASA-wide contest to provide NASA with a Cost Reduction Symbol and Slogan. Local contests were held at each installation with the deadline set for May 28.

The local contests will offer monetary awards up to $250 each for a slogan and a symbol and the winners of local contests will compete for grand prizes of $500.

Dr. Floyd L. Thompson, Center Director, has authorized U.S. Star Spangled Savings Bonds in the following denominations as prizes in the Center contest: A $500 bond will be awarded for a single entry which contains both a winning slogan and a winning symbol. If a single entry is not judged a winner for both symbol and slogan, two winners will be selected, one for the winning slogan and one for the winning symbol. Each of these winners will be awarded two $75 Star Spangled Savings Bonds. Four $25 bonds have been authorized for runner-up prizes if the judges determine there are entries eligible for this consideration.

The panel of judges will be selected from the Incentive Awards Committee and the winners will be announced in a future issue of Langley Researcher.



Engineers and Technicians at Pad 12, Cape Kennedy, prepare the Atlas-D booster and Project FIRE spacecraft for a ballistic flight down the Eastern Test Range. The flight took place on May 22.

PROJECT FIRE SUCCESSFULLY LAUNCHED FROM CAPE KENNEDY

NASA scientists reported complete satisfaction with all test phases of the Project FIRE II reentry heating experiment launched from Cape Kennedy at 4:55 p.m. on May 22.

The blunt-faced reentry spacecraft reached the necessary speed of 25,400 miles per hour as it was propelled back into the atmosphere near Ascension Island in the South Atlantic Ocean. The spacecraft traveled a distance of 5,140 miles.

This was the second heavily-instrumented, 200-pound Project FIRE spacecraft launched by NASA to expand scientific knowledge of reentry heating.

First of two FIRE flights took place from Cape Kennedy April 14, 1964, and was the fastest controlled in-flight reentry experiment ever conducted. The spacecraft reached a speed of more than 25,800 miles per hour and telemetered a large mass of important direct measurements of reentry heating.

Primary purpose of the second flight was to gather more data than the first experiment provided during the period of highest heating.

Project FIRE is managed by the Langley Research Center, under the general direction of NASA's Office of Advanced Research and Technology. Project FIRE has helped resolve some of the differences between various reentry heating theories and flight results have been used in the interpretation of research data resulting from laboratory experiments.

A review of flight results indicates that the Atlas launch vehicle, the velocity package, the FIRE II reentry package, and data gathering equipment on and near Ascension Island all performed extremely well.

A preliminary examination of the telemetry data from the Ascension Island tracking station clearly indicates that heating rate information both total and radiative was received during the reentry, including the critical period of peak heating. Telemetry records also indicate that all test check points occurred as scheduled and the thermocouples on the beryllium calorimeters returned temperature readings for the three different reentry periods programmed into the flight.

Results of this last FIRE test will be useful to designers of spacecraft entering the atmosphere at speeds up to and beyond that of the Apollo Command Module on its return from lunar flights.

The reentry spacecraft flown in the second Project FIRE was a blunt-faced vehicle with a conical afterbody, similar in nearly all respects to the first reentry vehicle. Large amounts of laboratory data exist on similar shapes, and the blunt-face closely resembles the shapes of U.S. manned spacecraft on which information has been accumulated at lower reentry speeds.

(Continued on page 3)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, Building 587, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

DAYLIGHT TIME. . .Effective at 12:01 a.m. on Sunday, June 6, clocks will be moved forward one hour in those sections of Virginia which did not convert to Daylight Saving Time in April. This includes the Peninsula area and consequently, the Langley Research Center will operate on Daylight Saving Time from June 6 to Labor Day.

WEDDING BELLS. . .Ronald A. Outlaw, Instrument Research Division, took his final vows with Theresa Taylor, Ling-Temco-Vought, on May 13. . .Wedding bells rang on Saturday, May 29 when Eleanor Cooke, Full-Scale Research Division, and Arthur J. Roch, Dynamic Loads Division, took the final vows in Winston-Salem, North Carolina.

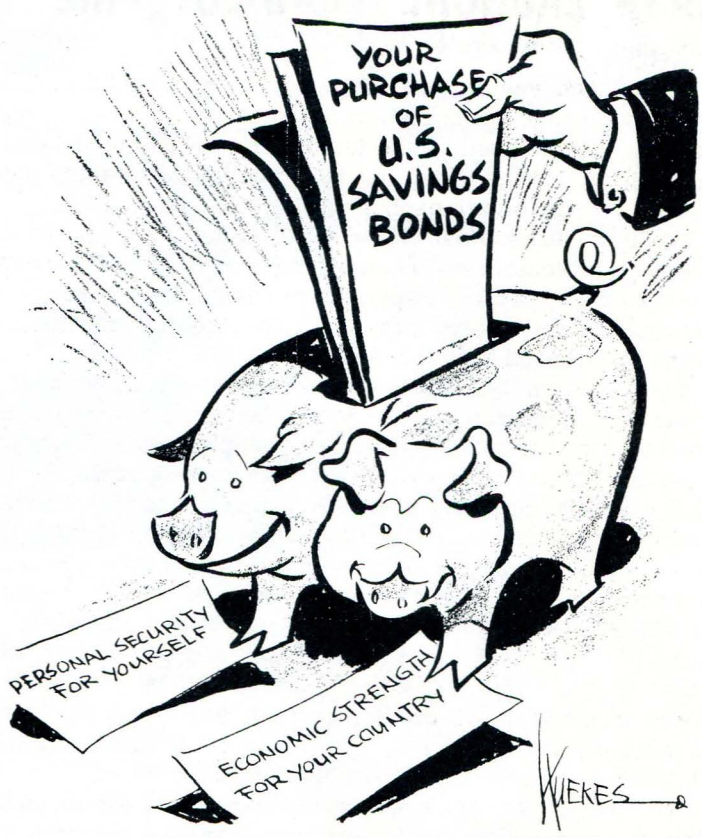
REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on June 8 from 3 p.m. until 4 p.m. Mrs. Beverly Beale, Government-wide Service Plan representative, will be here on June 16 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Harris, 2523, for an appointment.

NEW ARRIVALS. . .Announcing the birth of a daughter, Karen Annette, on May 16 is Charles Burch, Heavy Machine Shop. . .Weighing in at five pounds, fifteen ounces on May 16 was Anne Louise, new daughter of Samuel Sokol, Instrument Research Division.

ENGAGEMENTS. . .Making plans for an October wedding is Sandra Hogge, Fiscal Division. She is engaged to Douglas Branum, Newport News. . .Jerome Pearson, Dynamic Loads Division, is engaged to Jeannie Thompson, Hickory, North Carolina. Plans call for an August wedding.

BOOK SALE. . .The Hampton Branch of the American Association of University Women will hold a one day book sale of books left over from the annual sale. The sale will be held on June 12 from 9 a.m. until 5 p.m. at the Riverdale Shopping Center.

FOR RENT: Room with private bath. Wary, 722-7335.
FOR SALE: Westinghouse electric stove - $45, Muntz TV - $25, Cold Spot refrigerator - $30. Wray, 722-7335.
WANTED: Alternate drivers from Glendale to W.A. on 7:30 shift. Allen, 4711.
WANTED: Ride from Southampton to W.A. on 8 shift. McDermott, 3327.



IT'S LIKE A SIAMESE PIGGY BANK!

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of June 7:

Monday - French onion soup, baked Virginia ham, breaded veal steak, chicken chow mein, grilled cheese and bacon sandwich.

Tuesday - Chicken-vegetable soup, chicken and dumplings, grilled pork steak, veal stew, deviled crab, baked hash.

Wednesday - Tomato soup, fried clams, Spanish pot roast, liver and onions, cheese omelette.

Thursday - Vegetable-beef soup, grilled steak, spaghetti with meat sauce, fried chicken, tamale pie.

Friday - Clam chowder, roast beef, fried shrimp, boiled ham, broiled fish, hot dog.

The menu for the week of June 14 is as follows:

Monday - Green split pea soup, corned brisket of beef, chuckwagon steak, smoked pork sausage, Spanish omelette.

Tuesday - Cream of tomato soup, Swiss steak, chicken shortcake, broiled ham slice, fish cakes and cole slaw.

Wednesday - Vegetable-beef soup, roast beef, stuffed shrimp, Salisbury steak, baked hash.

Thursday - Chicken-rice soup, grilled steak, barbecued spare ribs, fried chicken, Irish omelette.

Friday - Clam chowder, sliced turkey and dressing, fried scallops, broiled fish, barbecued sandwich.

FOR SALE: White formal, full length, used once, size 7. Rash, CH 7-1447 after 4 p.m.
FOR SALE: Baby crib and mattress, $25; 5-drawer child's chest of drawers, $10; Cosco play pen, $15; girl's 20-inch bicycle, $15. Burcher, 877-1614.

NASA LAUNCHES PROJECT FIRE

(Continued from page 1)

The launch vehicle for Project FIRE was an Atlas-D. A velocity package using the solid propellant Antares II rocket motor (also used as the third stage of the Scout launch vehicle) added the speed needed to drive the reentry payload back into the atmosphere at 25,000 mph.

During reentry most of the speed (kinetic energy) of the reentering vehicle is changed to heat (thermal energy). Reentries at lunar and planetary return speeds generate significantly greater heat, and higher heating rates, than entries at orbital speeds.

At the speed Project FIRE attains, the temperature of the gases in the shock wave just ahead of the blunt reentry body approaches 20,000 degrees Fahrenheit. This temperature is an indication of the energy being transferred from the speeding vehicle into the surrounding air. The energy transferred is great enough to break diatomic gas molecules into individual atoms and to ionize many atoms.

Several chemical and physical changes then take place in the hot gas area just ahead of the reentering vehicle. Atoms may combine with atoms of a different element instead of their original diatomic twins. New gas components, not originally present, may be generated and with them new physical characteristics.

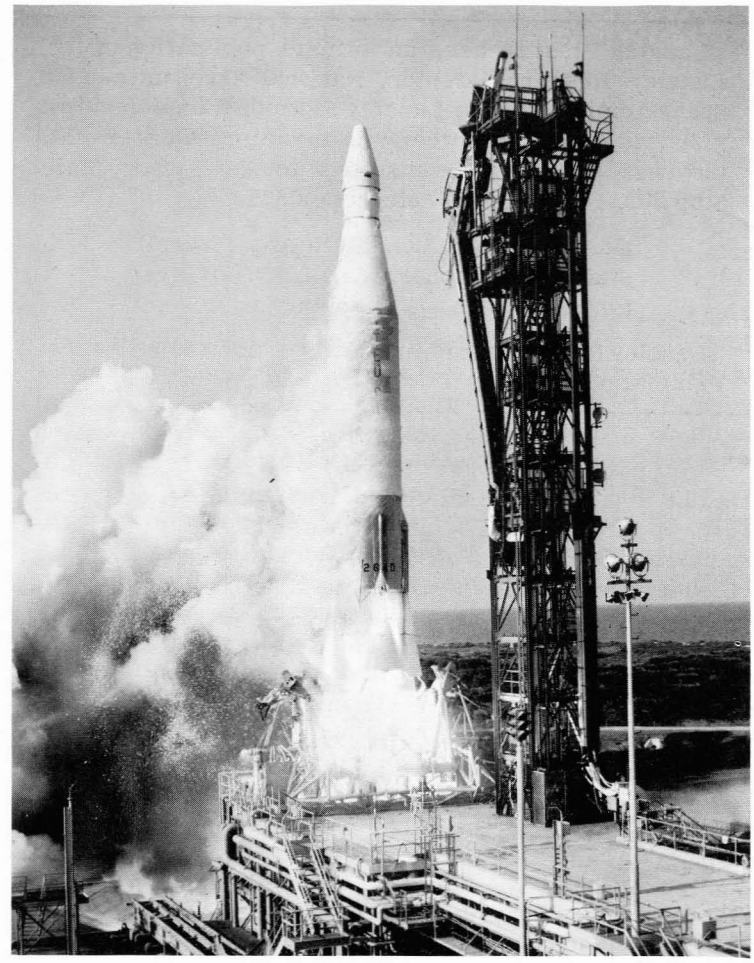
At satellite reentry speeds and below, convective or friction heating is predominant. Convective heating takes place when heat passes directly from the air to the vehicle flying through it. It occurs in smaller amounts at all flight speeds in the atmosphere.

At higher speeds, radiative heating becomes more important. Unlike convective heating, radiative heating does not depend on direct contact, but is analogous to the heat emitted from the burning of an electric stove which can be felt several feet away.

Project FIRE was conceived by NASA as the major national effort to obtain first-hand scientific information on the magnitude of heating to be expected during 25,000 mph reentries. The first experiment provided the data over three important segments of the heating curve. Flight 2 defined more completely the heating curve, particularly at the highest heating condition. This will have useful engineering applications in a variety of national programs and will increase the value of ground experiments and analyses.

Project FIRE is a research investigation of NASA's Office of Advanced Research and Technology, headed by Dr. Raymond L. Bisplinghoff. Project FIRE is a responsibility of the OART Space Vehicles Division, headed by Milton B. Ames Jr., Program Chief is Ralph W. May Jr., and Flight Project Officer is Ballard E. Quass.

Langley Research Center is responsible for managing Project FIRE. The Flight Reentry Programs Office, under David G. Stone, Manager, executes Langley's management functions. His principal assistants are Richard C. Dingeldein, in charge of the Mission Technical Office; I. G. Recant, head of the Supporting Programs Office; H. F. Weber, responsible for Spacecraft Systems; L. E. Williams, responsible for the Velocity Package; T. S. Williams, responsible for the Reentry Package; D. H. Ward, in charge of Operations, and J. E. Canady, head of the Space Vehicles Office. J. N. Daniel has responsibility for Tracking and Data Acquisition.



The Atlas-D lifted off Pad 12, Cape Kennedy, at 4:55 p.m. on May 22 carrying the second 200-pound Project FIRE spacecraft on a ballistic trajectory to expand scientific knowledge of reentry heating. A velocity package using the solid propellant Antares II rocket motor added the speed needed to drive the reentry payload back into the atmosphere at 25,000 mph.

BOOKS FOR SALE

The following books are for sale at the NASA Exchange Book Store in Building 586:

"Jane's All the World Aircraft" 1963-1964, for McGraw Hill Book Company.

"Dynamics of Flight," by Etkin.

"Handbook of Physics," by Condon and Odishaw.

"Control System Synthesis," by John Truxall

"Operational Mathematics," by Churchill.

"Viscous Flow Theory, Volume II," by Pai.

"Electronic Processes in Materials," by Azaroff and Brophy.

"A Laboratory Manual of Mammalian Anatomy and Physiology," by Sigmund Grollman.

"Laboratory Experiments in Organic Chemistry," by Adams, Johnson and Wilcox.

"Electronic Circuits, Signals, and Systems," by Mason Zimmerman.

"Introduction to Solid State Physics," by Kittel.

"Atmospheric Radiation, Volume I, Theoretical Basis," by Goody.

FOR SALE: 1963 Grady-White boat with top, 65 hp Mercury engine, Cox trailer. Leonard, 838-0111.

SUMMER CONCERT PROGRAM

Once again the Hampton Recreation Department invites employees to a summer of free entertainment in the air-conditioned Kecoughtan High School auditorium on Woodland Road.

Those who enjoy variety will find the 1965 program to their liking as some of the best Richmond, Williamsburg, Norfolk, Newport News and Hampton talent will combine to provide a season of enjoyment for all music lovers.

The summer program is as follows:

June 16, 8 p.m. - Hampton High School Band Concert under the direction of Tommy Lawrence. Long recognized as one of the best high school bands in Virginia, the Crabber musicians will offer a program of light music.

June 23, 8 p.m. - An Evening of Popular Opera under the direction of Frances P. Breeze.

June 30, 8 p.m. - Organ Pops Concert by Kitty Rayle Hutchinson. Also the Richmond Choral Society under the direction of Alton L. Howell.

July 7, 8 p.m. - CONARC Stage Band Concert under the direction of Richard Bessette. This represents jazz music at its best by one of the top military bands.

July 14, 8 p.m. - S.P.E.B.S.Q.S.A., Inc., Concert under the direction of James Youngblood. The local chapter of the nationally known Society for Preservation and Encouragement of Barbershop Quartet Singing in America performs regularly for local organizations.

July 21, 8 p.m. - Williamsburg Night under the direction of James S. Darling.

July 28, 8 p.m. - Hampton Lions Jug Band under the direction of Waverly Wornom. Dressed in striped uniforms, the performers get exciting music from such instruments as washboards, jugs, pieces of scrap metal, etc.

August 4, 8 p.m. - Senior High School Talent Night. This program will feature the 12 best acts from more than 60 staged last spring at Hampton's three senior high schools.

August 11, 8 p.m. - Variety Program by the Norfolk Recreation Bureau.

August 18, 8 p.m. - The Crusaders under the direction of Charles Flax.

GEMINI 2 TO BE REFURBISHED

NASA's Manned Spacecraft Center has announced that the Gemini 2 spacecraft will be refurbished and delivered to the Air Force for a preliminary unmanned flight in the USAF Manned Orbiting Laboratory Program.

The Gemini 2 vehicle made a suborbital unmanned flight from Cape Kennedy January 19.

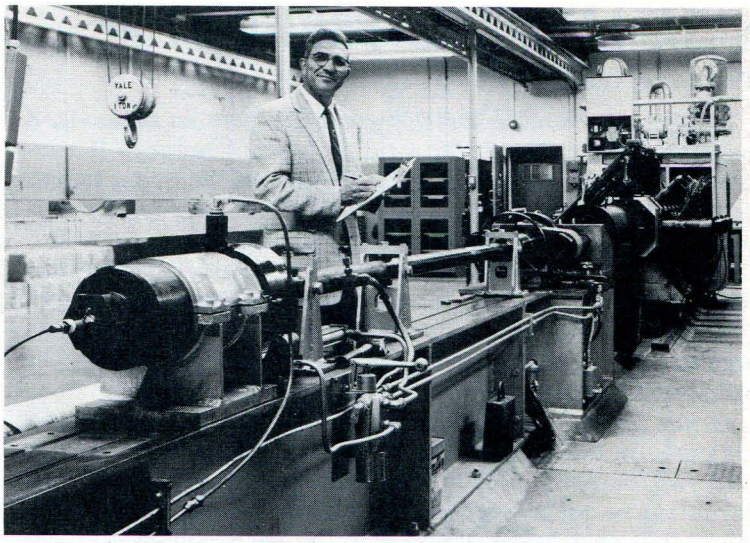
The spacecraft will be reworked by the McDonnel Aircraft Corporation under direction of the MSC for subsequent delivery to the Air Force in July 1966.

The Air Force will launch the spacecraft in an unmanned suborbital flight to test the Gemini "B" heat shield design. The Gemini B heat shield has a hatch to allow crew transfer from the Gemini after it has docked with the Orbital Laboratory.

The refurbishing will cost more than $5-million dollars. Funds will be furnished by the Air Force Space Systems Division.

WANTED: Ride or driving combination from Southampton to W.A. on 8 shift. Cooper, 4687.

FOUND: Pair of men's glasses in Building 1195. H. V. Bunting, 4791.



FASTEST GUN IN THE WORLD - The 20-foot light-gas gun at Ames Research Center has just fired the fastest shot ever recorded. B. Pat Denardo, Ames research scientist in charge of the shot, checks the gun. The gun "fired" a polyethylene cylinder at 25,300 mph, 700 mph faster than Earth escape speed and 3,200 mph faster than the previous record shot. The research "guns" are used to study entry into Earth's atmosphere from space, properties of gas flow, and hypervelocity impacts of meteorites on spacecraft and space suits. In a light-gas gun, an explosive charge pushes a piston into a chamber of hydrogen (the lightest gas) and the compressed gas in turn pushes the model out of the firing tube. A light gas must be used because it has a low mass and will expand at the highest speed after compression. Spoke-like projections in the rear are cameras which photograph the model at a camera speed of one-millionth-of-a-second as it flies past.

GODDARD ESSAY CONTEST

Dedicated to the leadership of American rocketry and astronautics, the National Space Club has announced the opening of the Robert H. Goddard Historical Essay Award competition for 1965. This annual nationwide competition, with a $200 prize, is open to any U.S. citizen.

The contest is named in honor of the world rocket pioneet, Dr. Robert H. Goddard, whose scientific and technological contributions opened the door to space.

Essays may treat with any significant aspects of the historical development of rocketry and astronautics, and will be judged on their originality and scholarship. They may bring new information to light or may cast a new and different light upon events or individuals influencing rocketry and astronautics in the United States.

Entries should be submitted by November 1, 1965, to the Goddard Historical Essay Contest, c/o National Space Club, 1629 K Street, N.W., Washington, D.C. 20006. The winner, who will be announced at the Dr. Robert H. Goddard Memorial Dinner in March, 1966, will receive the Goddard Historical Essay Trophy and a $200 prize.

Winner of the third Goddard Historical Essay Trophy for 1964 was John Tascher of Case Institute of Technology. His essay was on the Cleveland Rocket Society and will be published in the fall issue of Technology and Culture.

Dr. Eugene M. Emme, NASA Historian, is chairman of the NSC's Committee for the History of Rocketry and Astronautics, whose members serve as judges for the contest.

A group of chaplains from the various NATO countries visited the Langley Research Center on May 20. Shown in the top photograph are the visting chaplains who represented 12 countries including Canada, Belgium, Denmark, Italy, France, Great Britain, Norway, The Netherlands, Portugal, West Germany, and the United States. Lower left

Division, explains a proposed supersonic wing design t
The Rev. Aart C. J. Van Der Poel, The Netherlands, an
Major Joano Ferreira, Portugal. Lower right photograph
Eugene C. Draley, Assistant Director for Flight Projects
talks with Major General Robert P. Taylor, Chief of Chap

110 VOLTS CAN KILL

Ordinary household electric current -- 110-112 volts -- can be a killer. Among the 1,000 people killed each year by electric shock are many who die because of the mistaken belief that ordinary house current is safe - that it will shock, but not kill. Under the right circumstances, 110 volts will kill. If people are not aware of the deadly potential of 110 volts of electricity, they neglect the precautions necessary to prevent electric shock - sometimes with fatal consequences.

It is important to know the hazard of electric shock and the precautions that will prevent or minimize electric shock in and around the home.

Electricity always seeks the ground by following the path of least resistance. If the human body, or any part of it, should provide the path of least resistance to an electric current in its search for ground, electric shock is experienced. Whether an electrical contact will result in electric shock or electrocution depends on the path, strength, and duration of the current. The possibility of electrocution is increased if the body is wet, or is in contact with water or some metal object which is grounded, because under these circumstances current resistance is lower and a better pathway is provided.

The following precautions will eliminate or minimize the hazards of electric shock:

Use only electrical equipment, appliances, or tools that are in good condition. An electric shock is a clear indication of a defect. Further use of the tool or appliance without repair is an invitation to electrocution.

Ground electrical tools and such major electrical appliances as washers, dryers, and refrigerators, if they are not grounded by a built-in three-wire system. Grounding may be performed by installing a No. 18 single-conductor stranded copper wire from the frame of the tool or appliance to a cold water line. In case of an electrical defect, the ground wire provides the easiest pathway for the electrical current seeking the ground and thus prevent shock to the user of the tool or appliance.

Keep electrical appliances such as radios, phonographs, heaters, and sunlamps out of the bathroom. Wet skin conducts electricity much better than dry skin, and most home electrocutions involve a combination of water and electricity. The bathroom is the chief danger area. Many accidents occur when electrical appliances fall into the bathtub or when someone touches an appliance with wet hands while standing on a wet surface. Either type can be fatal. Kitchens, too, can combine water and electricity.

If electrical appliances or tools are used near grounded metal such as water pipes or radiators, do not touch the appliance and the grounded metal at the same time. An electrical defect in the appliance will result in shock caused by the current using the body as a bridge to the grounded metal.

Electric shock is a hazard to every member of the family. Accidental electrocution deaths in the home are often due to ignorance - both of the fatal potential of 110 volts and the basic precautions for preventing electric shock.

WANTED: Ride from Washington St., Hampton, to W.A. on 8 shift. Dalin, 4607.

LOST: Prescription glasses with brown frames. Cochrane, 3561.

NASA BOWLING LEAGUE

Mexicali Restaurant ended the season in the NASA Tenpin League by leading Group A with 91 wins and 41 losses. Flyers came in second with 85 wins and 47 losses. Top scores for the final week were rolled by Russell Hopko with a 241 game and 621 set.

Odd Balls were winners in Group B with 80.5 wins and 51.5 losses. Ivy Farms Shell trailed in second by only a half game margin. Beats Me were third with 77 wins and 55 losses.

GROUP A

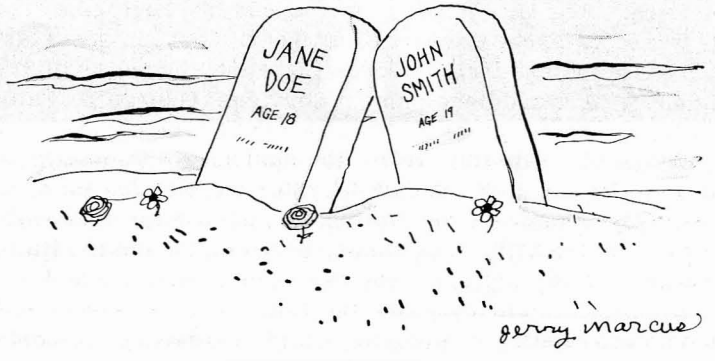
Mexicali	91	41	Electronic Shop	62	70
Flyers	85	47	Short Circuits	58	74
Alley Cats	84	48	Hornets	56	76
Phantoms	76	56	Payloads	46	86
Unitary	76	56	Devious	44	88
Frame Ups	73	59	Raiders	41	91

GROUP B

Odd Balls	80.5	51.5	Cee Pees	72	60
Ivy Farms	80	52	Ten Benders	67.5	64.5
Beats Me	77	55	Flight Eng.	60	72
Misfits	75.5	56.5	Galaxies	59.5	72.5
Pinwigglers	75.5	56.5	HMS	57	75
A-OK's	73.5	58.5	Spare Oops	38	94
Ranch House	72	60	Malfunctions	34	98

FOR SALE: 1965 Honda Super Sport 50, 4 speeds, ignition magneto, 20 miles-per-gallon; also mine detecting set, audio frequency, phase selective type, audible and visual, battery operated, 1-1/2 and 135 volts DC - portable. Shaw, 826-7277 after 5:30 p.m.

FOR SALE: 14-foot cedar strip boat with 12 hp engine and trailer; Youngstown fully automatic dishwasher, under the counter model, and Golden Book Encyclopedia - 16-book set. Press, 826-0038.



NASA, FAA FORM 12-MAN BOARD

NASA and the Federal Aviation Agency announced formation of a joint 12-member Coordinating Board for the exchange of research and development information and joint planning of related activities.

The Board was created by agreement between FAA Administrator Najeeb E. Halaby and NASA Administrator James E. Webb. Co-chairmen are Dr. Raymond L. Bisplinghoff, NASA's Associate Administrator for Advanced Research and Technology, and Robert J. Shank, FAA's Associate Administrator for Development.

Purpose is to strengthen the coordination, planning and exchange of information between the two agencies.

The FAA is chartered by law with responsibilities in research and development in air traffic and safety aids and aircraft development and service testing.

NASA conducts scientific research programs for the improvement of air vehicles and systems and the development of new concepts in aeronautics.

The two agencies are conducting many joint projects mainly in air safety and operations research. NASA is providing technical support to the FAA in development of the supersonic transport.

The Board will focus its attention on plans and activities of the two agencies for aeronautical research, development, investigations, and testing, including ground facilities, to gain the greatest return from available resources and avoid undesirable duplication. A function of the Board will include facilitating the exchange of information on aeronautical problems and calling attention to areas in which advances in aeronautical technology are most urgently needed.

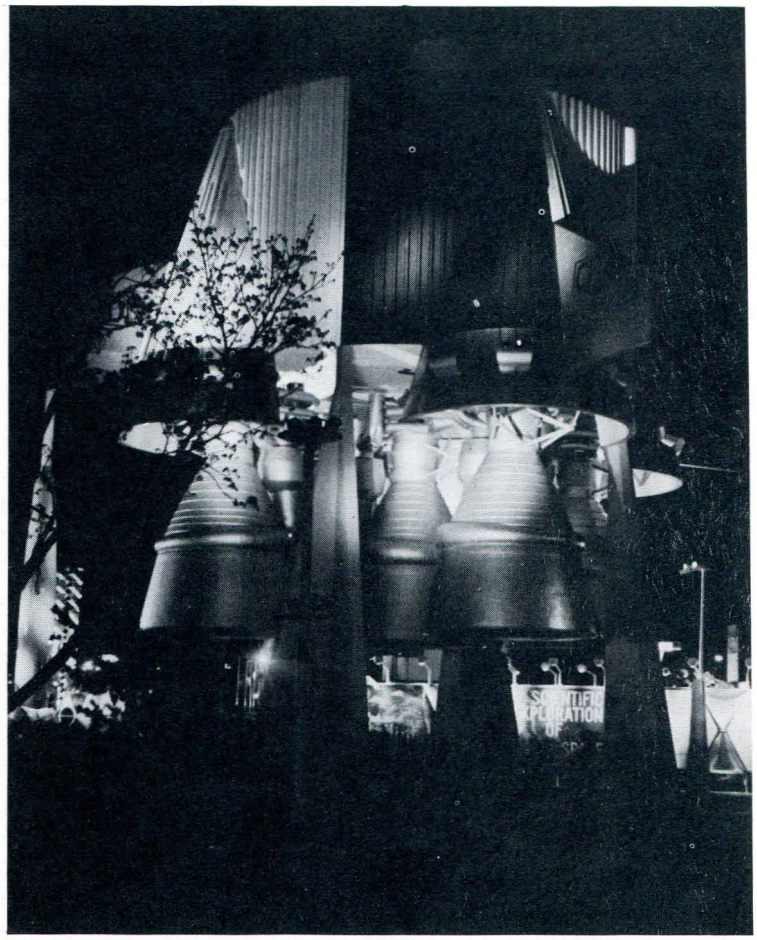
The Board is expected to give greater support to the coordination between the agencies on the policy and planning level leading to major management decisions by strengthening the present technical liaison between operating groups.

NASA personnel responsible for providing information leading to advanced aircraft design acceptable to the aviation community will work through the board in advising their FAA counterparts on status of research directed to meeting FAA needs and offering advice on aircraft operating problems. This mutual exchange will be directed to the plans of FAA in developmental work and service testing of improved aircraft.

NASA members of the Board, under the co-chairmen, are C. W. Harper, Director of Aeronautical Research; W. S. Aiken, chief of Aircraft Operations Research; Dr. W. L. Jones, Director of Biotechnology and Human Research; Charles H. Gould, chief of Guidance and Control Branch, Electronics and Control Division; and Adm. W. F. Boone, USN (Ret.), Deputy Associate Administrator for Defense Affairs. John H. Enders, Aerospace Technologist in the Office of Advanced Research and Technology, is secretary.

FAA members include Joseph D. Blatt, Director of System Research and Development Services; George P. Bates, Acting Director, Aircraft Development Service; Gordon M. Bain, Deputy Administrator for Supersonic Transport Development; Dr. M. S. White, Federal Air Surgeon; and David D. Thomas, Associate Administrator for Programs. Secretary is William A. Simpson, Special Assistant to the Associate Administrator for Development.

WANTED: Gentleman to share apartment. Perez, 723-0606.



Shown here at the U.S. Space Park, New York World's Fair, is a full-size mock-up of the propulsion section of the Saturn V launch vehicle's S-I, or first stage. Projecting downward are the nozzles of the stage's five F-1 engines. A complete Saturn V would be 275 feet tall and a complete S-I stage would be 138 feet tall. The Saturn V will lift the Apollo three-man spacecraft from the Earth and hurl it toward a lunar landing.

NASA CLOSES TWO OFFICES

NASA is closing its Area Professional Staffing Offices in Santa Monica, California, and Dallas and is moving its New York office to Boston.

The changes follow a review of the agency's recruiting activities to determine whether to retain the offices now that the agency's recruiting needs have leveled off.

Relocation of the New York office to Boston will assist NASA's new Electronics Research Center in Cambridge in its recruitment program.

The two employees in the Santa Monica office have been reassigned to NASA's Western Operations Office, also in Santa Monica. The two-person Dallas staff has been offered reassignment in the Personnel Office at the Manned Spacecraft Center.

WANTED: Ride from Holly Court to W.A. on 8 shift. George Johnson, 3402.

FOUND: Pair sun glasses in case in Parking lot of Building 1232. Dunkley, 4444.

WANTED: Gentleman, preferably a co-op, to share house in Hampton next fall. Ellison, 3271.

WANTED: Ride or driving combination from Beaconsdale Meadows to W.A. on 7:30 shift. Lambiotte, 4842.

KNOW YOUR CREDIT UNION

The strength of any organization lies in an informed membership. To really "spread-the-word," it has been decided to take advantage of a first-class duplicator recently authorized by the Board of Directors and publish a quarterly bulletin. This bulletin, to be known initially as the Credit Union News, will be mailed (at no extra cost) with the member's statement each quarter. It is expected that distribution will begin in June with the News accompanying the May 31 statements sent NASA members 1 through 7999. Newer NASA members and all Air Force civilians will receive their initial bulletins in early July and all Air Force military members in August.

To get off on the right foot, some guidance from the membership would be helpful. In short, what areas are of interest? To encourage member participation, an award of $5 will be paid (on a continuing basis) to the one who first submits in writing a question or a subject that is selected for discussion in the News or in the Credit Union column in Langley Researcher or the Flyer. In all fairness, however, the question or subject must not be one falling under the heading of current events. For instance, when will the new building be ready hardly qualifies for $5. That, and similar questions, will normally be discussed without prompting.

Then comes the matter of getting members to read the News. Too many, it is safe to say, automatically give their statements the deep-six. If they continue, as much as $10 can go down the drain. Scattered, out of context, in the body of each issue will be printed the account numbers of five active members. The one who first reports his number to the Credit Union will receive $10 and the other four, $5 each as they call or write in. Not much, maybe, but well worth the effort involved.

Progress is being made on the Credit Union's new home. The architect is working on the final plans with submission and approval scheduled for early June. Then comes the submission of bids, the signing of a contract, and (hopefully) the breaking of ground on or about July 15.

LESHER NAMED TO NEW JOB

Dr. Richard L. Lesher has been appointed Deputy Assistant Administrator for Technology Utilization at NASA Headquarters.

Dr. Lesher has been a consultant to NASA since June 1964 and a special assistant to Breene M. Kerr, Assistant Administrator for Technology Utilization, since November 1964.

In his new capacity Dr. Lesher will assist the Assistant Administrator for Technology Utilization in the identification, reporting, evaluation, and general dissemination of new technology, resulting from NASA activities, which appears to have potential for non-aerospace applications. He will also have primary responsibility for the coordination and development of the university-based Regional Dissemination Center Program of NASA.

Prior to joining NASA, Dr. Lesher served as Assistant Professor of Business Organization with Ohio State University, Columbus, from September 1963 to June 1964.

During 1962-63, he worked as a Research Fellow at Indiana University in the development of the first NASA-sponsored Regional Dissemination Center. During this time he earned his Doctor of Business Administration degree.

TWO EMPLOYEES RETIRE

William P. Ladd, Standards Section, Instrument Research Division, and Betty R. Katchmore, Accounting Branch, Fiscal Division, retired from the Center on May 21.

William P. Ladd

Ladd was born May 10, 1900 in Thetford Center, Vermont. He attended Stetson Academy in DeLand, Florida, and received his B.S. degree in Electrical Engineering from the University of Florida.

He served in the U.S. Army and worked for Johns Mansville Products Corporation in Jarratt, Va., and the Electric Power and Light Company in Mexico. He joined the Center staff on April 2, 1951.

Betty was born in Hampton and graduated from Hampton High School. She started her Government career on September 2, 1942 as a clerk-typist at the Hampton Roads Port of Embarkation. She transferred to Fort Story in February 1943 and joined the Center staff on November 23, 1943. She resigned September 17, 1952 and returned to Langley on April 1, 1959.

WOMEN IN GOVERNMENT

At a recent meeting in Huntsville which was attended by 200 women employees of Marshall Space Flight Center and the Army Missile Command, Esther Peterson, Assistant Secretary of Labor, spoke of President Johnson's continuing interest in equal opportunities for women as expressed by him at a Cabinet meeting.

At the meeting Daisy Fields, Personnel Division, NASA Headquarters, delivered the following message from James E. Webb, NASA Administrator, concerning his policy on the status of women:

"Some of the key people who have contributed to our spectacular successes to date are women scientists and engineers located in various NASA installations. Going quietly and painstakingly about their tasks they have demonstrated beyond a doubt that brains are not a matter of sex.

"We are genuinely proud of the contributions being made by women in NASA and are confident that as the years go by more and more of them will take their place alongside men in this complex technological age to make even greater contributions to mankind in the space sciences, life sciences, mathematics and administration.

"I want to assure you that it is my intention to carry out President Johnson's request that the Federal Government be a 'showcase' for equal opportunity without regard to sex. And when the spotlight shines on the showcase housing NASA, we will be pround indeed to stand up and be counted."

FOR SALE: Englander bunk beds with ladder and rail. Hart, PA 2-8172.

FOR SALE: G-3 ski boat, 50 hp electric start Mercury engine, and Cox trailer - $600. Callis, 898-6419.

FOR SALE: 1962 6-passenger Volkswagon pickup truck - $950. Morris Holliday, 851-2360.

DR. EUGENE M. EMME APPH X LARC

Langley Researcher

VOLUME 4, NUMBER 12 LANGLEY RESEARCH CENTER JUNE 18, 1965

STAFF MEMBERS ELECTED OFFICERS OF LOCAL AIAA

Gerald D. Walberg, High-Temperature Materials Branch, Applied Materials and Physics Division, has been elected chairman of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics for the 1965-66 season.

Other officers are: John P. Mugler Jr., High-Temperature Materials Branch, vice-chairman; Carl A. Sandahl, Head of Vehicle Performance Branch, Applied Materials and Physics Division, secretary; and William H. Michael Jr., Head of Mission Analysis Section, Space Mechanics Division, treasurer.

The following Center employees were elected to the Board of Directors: Robert W. Boswinkle, Office of the Assistant Director; Don D. Davis, Head of High-Temperature Materials Branch; Charles J. Donlan, Associate Director; Richard E. Kuhn, Head of Powered-Lift Aerodynamics Section, Full-Scale Research Division; Dr. Robert W. Leonard, Structures Research Division; Axel T. Mattson, Office of Associate Director; John P. Reeder, Assistant Chief of Flight Mechanics and Technology Division, and Robert O. Schade, Flight Mechanics and Technology Division. Also serving on the Board of Directors are Robert R. Piper, U.S. Army Aviation Materials Laboratory, Ft. Eustis, and Edwin M. Russell, Ling-Temco-Vought.

Walberg was born February 2, 1934 in Victoria, Texas. He received his B.S. degree in Aeronautical Engineering from the Virginia Polytechnic Institute in 1956 and was awarded his Master of Science degree in Aeronautical Engineering by the same institution in 1962.

He joined the Langley Research Center staff in February 1957 and was assigned to the 8-foot Transonic Tunnels Branch where he engaged in research on the problems of supersonic aircraft in the transonic speed range. He became a specialist on aerodynamic flutter.

Walberg was transferred to the High-Temperature Materials Branch in July 1961 to study ablation materials for reentry vehicle heat shields.

Mugler was born January 7, 1929 in Hampton. He was awarded his B.S. degree in Aeronautical Engineering by Virginia Polytechnic Institute in 1949. He earned the degree of Master of Science in Aeronautical Engineering from VPI in June 1959 and has completed course work on his doctorate.

He joined the Langley staff in January 1950 and was assigned to the 8-foot Transonic Tunnel. In March 1952 he was called to two years' active duty as an officer in the Air Force.

Mugler rejoined the Center in March 1954 to continue aeronautical and space research in the 8-foot Tunnel. In 1961 he was assigned to the High-Temperature Materials Branch to study vacuum effects on materials and is now

(Continued on page 8)

DR. THOMPSON REPRESENTS NASA AT CEREMONIES FOR ASTRONAUTS

6/16

Dr. Floyd L. Thompson, Director of the Langley Research Center, was the official NASA representative at Tuesday's ceremonies at the University of Michigan in honor of the two Gemini 4 astronauts.

Dr. Thompson was in the official party which welcomed Astronauts James A. McDivitt and Edward H. White when the Gemini pilots arrived in Ann Arbor by airplane to receive the plaudits of their alma mater and the state of Michigan.

Dr. Thompson, also an alumnus of the University of Michigan, participated in ceremonies held for the two space heroes at the University of Michigan stadium, at the dedication of the university's new Space Research Building, and at a luncheon on the campus for the visiting dignitaries.

The Space Research Building, constructed with a $1.75 million grant from the NASA, was dedicated after the stadium ceremony. Dr. Thompson, speaking at the dedication, said "the events that brought us here today are milestones of progress, achievement, and success in a great national program that directly involves the coordinated efforts of thousands of people throughout our nation...Indirectly, it affects us all and influences our future in a profound manner."

Dr. Thompson said, "We are particularly proud" of Astronauts McDivitt and White. "They have recently volunteered

(Continued on page 8)

Captain J. W. Conger, Captain of the USS Wasp, greets Astronauts Edward H. White and James A. McDivitt after their four-day flight in space. Also greeting the Gemini 4 crew members is Ben James, NASA Headquarters. Additional photographs are shown on Page 3.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, Building 587, telephone 2575

Editor.....Ruth Angel Verell
Staff Photographer..... Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEWLY WEDS. . .George Michael Jurscaga, Mechanical Service Division, took his final vows with Teresa Ann Moore, Seaford, on June 6 at the Zion Methodist Church in Seaford. Ushers were Judson D. Moore, Mechanical Service, and Charles E. Cockrell, Research Models and Facilities Division. . .Karen K. Walls, Administrative Service Division was married to Joseph H. Nix on June 1. Wedding bells rang on June 5 when Freddie Reed, Mechanical Service Division, took his final vows with Sandra Baity, Hampton, at the Liberty Baptist Church in Hampton.

DIAPER LINE. . .Weighing in at six pounds, fifteen ounces on May 31 was Leigh Ann, daughter of Irving E. Figge, Structures Research Division. . .Announcing the birth of an eight pound daughter, Ruth Ellen, on June 1 is Glenn Gates, Structures Research. . .Celebrating the birth of a daughter on June 1 is Doyle P. Swofford, Applied Materials and Physics Division.

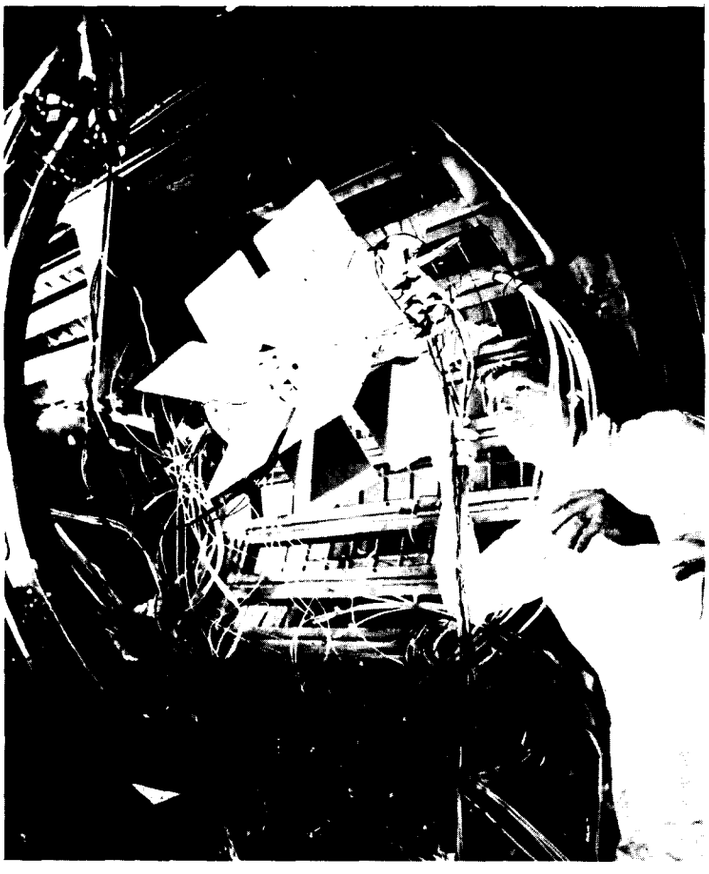
TWO EQUALS EIGHT. . .No wonder there's often a breakdown in human communications. Although there are only two persons talking or writing, there may be as many as eight personalities: 1. You, 2. I, 3. Who I think I am, 4. Who you think you are, 5. Who you think I am, 6. Who I think you are, 7. Who I think you think you are, 8. Who you think I think I am.

ROBERTS RETIRES FROM NASA

Earl C. Roberts, Bindery Worker in the Publications Branch, Photographic Division, retired from the Center on June 9 after serving more than 21 years with the Langley Research Center.

Roberts was born October 15, 1920 in Doylesville, Virginia. He studied Mechanical Drawing at the Monroe Trade School in Lynchburg and joined the Center staff on April 17, 1944 as a Draftsman in the Engineering Section. He transferred to the Photographic Division in 1950.

FOR SALE: Rock maple bunk bed - $50. Caldwell, 723-5714.
WANTED: Home for kittens. Chamberlin, 838-2263 after 3:30.
FOR SALE: 16-foot fiberglas Juniper boat and tilt-trailer - $250. Franske, TR 7-0539.
FOR SALE: 1963 MG Midget. Barnes, 838-2271.
FOR SALE: 1963 Morgan, 4-seater, TR4 engine - $1895 or will trade for American car of comparable value. Henry, 595-2337.
FOR SALE: Girl's 26-inch bicycle - $17. Smith, PA 3-6488.



NUCLEAR POWER FOR NIMBUS - Technician adjusts wiring on two nuclear generators that will provide part of the power for NASA's Nimbus B advanced weather satellite. The generators were built by the Martin Company, Baltimore, under contract to the Atomic Energy Commission.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of June 21:

Monday - Beef-barley soup, beef stroganoff on noodles, half-dozen fried oysters, baked ham, spiced luncheon meat.

Tuesday - Puree of bean soup, roast ribs of beef, grilled Canadian bacon, shrimp gumbo, macaroni and wieners.

Wednesday - Consomme julienne, country style chopped steak, chicken pot pie, stuffed flounder, Austrian ravioli.

Thursday - Vegetable-beef soup, grilled steak, roast pork with apple sauce, fried chicken, tomato-cheese rabbit.

Friday - Clam chowder, Spanish pot roast, stuffed shrimp, broiled fish, chili con carne.

The menu for the week of June 28 is as follows:

Monday - Cream of tomato soup, chopped steak, baked stuffed pork chop, knockwurst, grilled cheese sandwich.

Tuesday - Chicken-noodle soup, fried clams, braised short ribs or beef over rice, meat loaf, hot dog.

Wednesday - French onion soup, Swiss steak, grilled pork chops, fried chicken, baked hash.

Thursday - Vegetable-beef soup, grilled steak, fried shrimp, pork chow mein with rice or noodles, deviled crab, cheeseburger.

Friday - Clam chowder, roast prime ribs of beef, fried scallops, broiled fish, barbecued sandwich.

FOR SALE: 4 natural ranch mink skins - $75. Thomson, 596-2832.

A number of Langley employees were recently awarded the U.S. Treasury Department pin, shown above, for their outstanding service during the Activities Association's 1965 Bond Campaign. Recipients of the pins were: Herbert Pelton, Marna Cordle, Leonard McNiel, Granville Webb, Edward Ray, Tom Ballard, Samuel Scott, Ronald Amole, Frank Lawrence, Richard Couch, James Matthews, Thomas King, Richard Hofler, George Summerfield, Floyd Phaup, Phyllis Evans, Sharyn Mullins, Charles Edmiston, and William F. Giannini. Letters of appreciation were sent to Dorothy Moore, Clark Collie, Ronald Mills, James Neal, Robert Huffman, Curtis Shively, D. E. Hinton, Iris Anderson, Sue Grafton, Rossalyn Smith, and Joseph Italiano.

BOOKS FOR SALE

The following books are for sale at the NASA Exchange Book Store in Building 586:

"Boundary Layer Theory," 4th Edition by Schlichting.

"Arithmetic Operations in Digital Computers" by Richards.

"Dynamics of Flight" by Etkin.

"Real Analysis" by McShane and Botts.

"Calculus of Variations" by Gelfand and Fomin.

"Control System Synthesis" by Truxal.

"A Survey of Modern Algebra" by Burkhoff and MacLane.

"Energy Methods in Applied Mechanics," by Henry L. Langhaar.

FOR SALE: 1955 Plymouth station wagon, new valves and brakes - $175. Haynes, 244-3104.

FOR SALE: 1962 Sears motorbike. Pressley, 838-1623.

DIVISION BOND STANDINGS

Division	Percentage Prior To Drive	Current Percentage
Office of Director	82	92
Research Reports	72	76
Off. Asst. Dir., Flight Projects	59	63
AMPD	53	56
Analysis and Computation	59	63
Instrument Research	53	55
Space Mechanics	63	67
Dynamic Loads	59	66
Structures Research	72	73
Aero-Physics	59	61
FMTD	76	76
Full-Scale Research	60	64
Off. Eng. and Tech. Services	82	82
Electrical Systems	79	82
FVSD	71	74
Mechanical Service	72	76
Plant Maintenance	76	78
RMFD	69	71
Off. Asst. Dir. for Admin.	72	72
Administrative Services	64	74
Fiscal	72	77
Personnel	86	93
Photographic	78	79
Procurement	69	76
PERCENTAGE	67	71

TOTALS: New Subscribers - 158; New Increases - 112

FOR SALE: 1959 50 x 10-foot Ritzcraft trailer. Suits, 838-0497 after 5 p.m.

FOR SALE: 26-inch Kenmore ironer - $35. Sleeper, 244-4537.

Sophia Freire presents a $25 savings bond on behalf of the Activities Association to John C. Gustafson, Research Models and Facilities Division, who increased his payroll savings during the bond drive. Iris C. Geer (not shown), Office of the Director, a new participant in the U.S. savings bond plan, was also awarded a $25 savings bond by the Activities Association.

FIREFLY ROUNDUP HELPS NASA

4-H Club members in the central Florida counties of Manatee and Suwanee are temporarily adding another H to their club pledge which contains the words Head, Heart, Hands and Health. The fifth stands for Hunt.

Twenty-four hundred 4-H clubbers are hunting fireflies in the interest of space science. The insects are vital to the development of an instrument that will detect life in the upper reaches of the earth's atmosphere.

The project, dubbed "Fireflies for Research," was undertaken at the request of the Goddard Space Flight Center where scientists are developing the instrument.

Appropriately called Firefly, the instrument uses an extract of the common firefly's tail lantern which is designed to light up on contact with live microorganisms. In the flight version of the instrument, this light will be detected by a sensitive photo-electronic system and radioed back to earth to reveal the amount of life detected.

Chief mission of the Firefly life detection instrument will be to help complete the picture of the earth's biosphere - that area around the earth containing life.

Another is to learn at what altitude the protective shrouds can be ejected from planetary bound spacecraft without contaminating the vehicles with earthly organisms.

A third use of Firefly will be to find out if there is any organic life from space in the earth's upper atmosphere.

The operation of the Firefly instrument is based on the same chemistry which the firefly uses to light his tail lantern.

Simply stated the firefly produces his light by converting the energy contained in certain chemicals in his tail lantern into light. He does this by combining adenosine triphosphate (better known as ATP) with these chemicals.

ATP is a high energy phosphate compound essential to all life as it is known on earth. It is the closest man has come to isolating the ultimate spark of life. Thus, it can be said that where there is ATP there is most likely earth-like life.

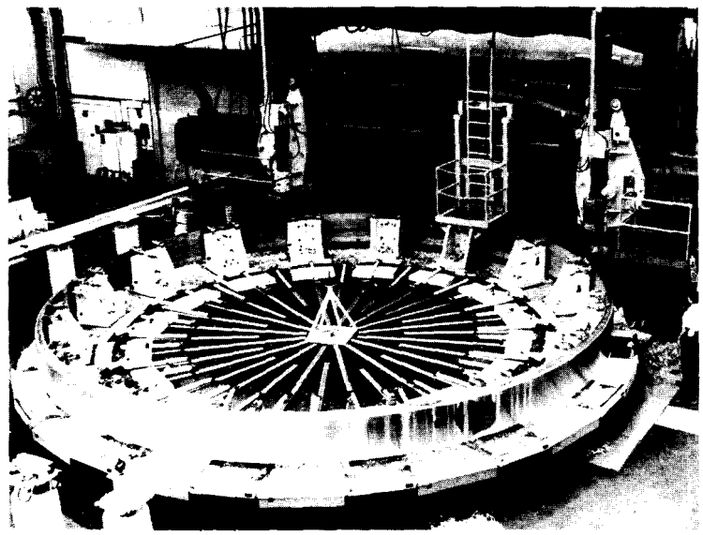
Since Goddard's Firefly life detection instrument contains an extract of the firefly insect's tail lantern, only ATP is required to make it glow. When the instrument encounters a live microorganism in the upper atmosphere the ATP container therein will be isolated and brought into contact with the extract, causing it to glow.

Scientists are hopeful that by the time Firefly instrument is packaged for flight, it will be able to detect the amount of ATP estimated to be in a single living cell.

PROFESSOR TO VISIT CENTER

Dr. Otto Laporte, Department of Physics, University of Michigan, will lecture on the "Effect of Radiation on Shock Waves" on Monday, June 28 at 9:30 a.m. in Room 219, Building 587. Those wishing to attend should call the Training Office, telephone 2611.

FOR SALE: 20-foot cabin cruiser. Weade, 826-6506.
FOR SALE: 3-bedroom, 1-1/2-bath brick rancher near Riverdale. Bradford, 838-2193.
WANTED: Girl to share furnished house in Hallwood. Helen Mulcahy, 851-3686.
FOR SALE: 2-bedroom waterfront cottage in Poquoson, built-in range and oven, and refrigerator, $8500. Lawson, 868-9253.



A 51-year-old vertical boring machine that milled gun turrets for World War I battleships is still in operation turning out parts for space rockets. The machine makes the chips fly every day in the Marshall Space Center's Michoud Operations. Its turntable has been enlarged from 27 feet to 42 feet to accommodate components for sections of the Saturn V moon rocket booster being built for NASA by the Boeing Company. The rocket ring, shown here, revolves at high speed while sharp vertical cutters trim the metal to extremely close tolerances.

CHARCOAL, THE NEW MENACE

According to information from the National Safety Council, 17 deaths have occurred from the burning of charcoal in enclosed areas.

Of the 17 fatalities, seven happened in vehicles, five in homes, two in tents, one in a cabin, one in a shed and one in an undetermined area. Eleven accidents resulted when charcoal was used for heat.

Broiling food with charcoal briquets has become extremely popular in recent years. In 1963, American barbecuers consumed a record amount of some 525,000,000 pounds of wood charcoal briquets. Usually the briquets are burned safely outdoors where there is no danger of carbon monoxide poisoning.

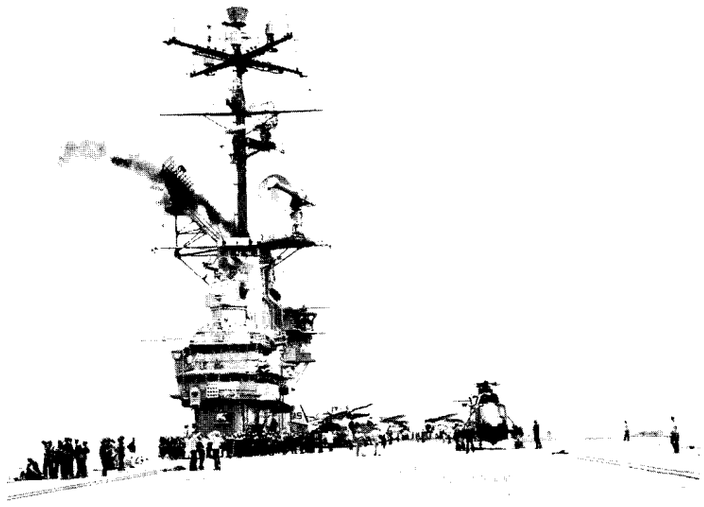
The mistake is made when people use grills with briquets in enclosed areas, such as garages, basements, porches, patios, cabins, tents and in station wagons or automobiles.

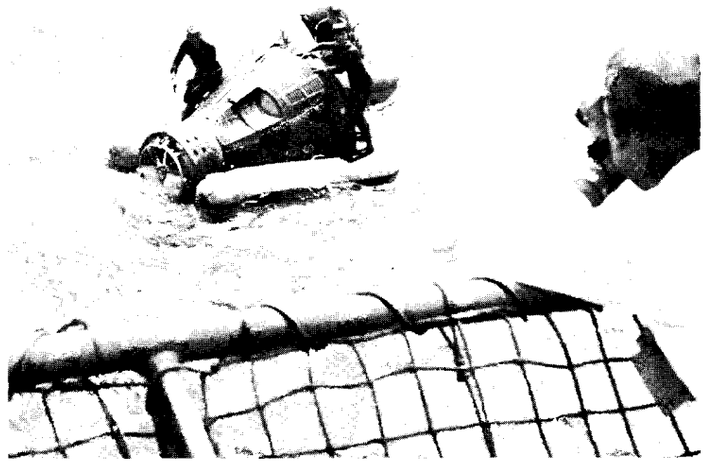
No one knows how many persons have been overcome by using charcoal burning grills in tightly enclosed areas. However, enough accidents have turned up to make safety and health authorities concerned.

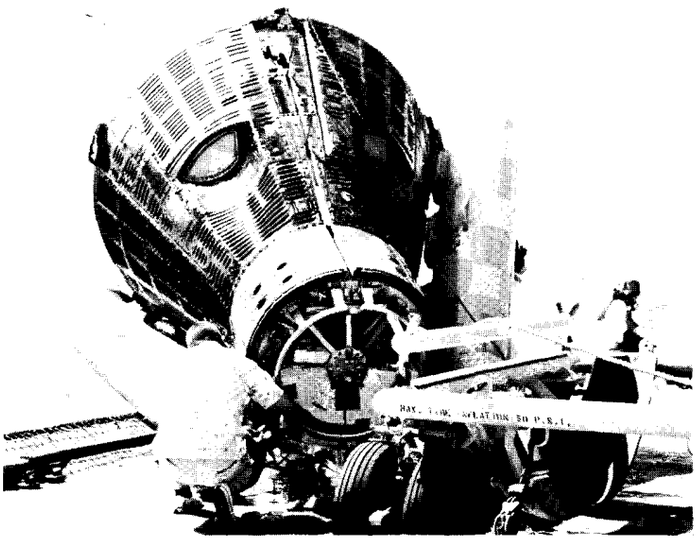
What makes carbon monoxide so especially treacherous is that its presence cannot be detected by the senses. It is an invisible, odorless, colorless, and tasteless gas and can overcome a person without warning. In effect, it causes body tissues to suffer oxygen starvation.

Anyone who burns charcoal indoors to keep warm does so at the risk of his life.

WANTED: Axle hitch suitable for pulling 16-foot travel trailer. Miller, PA 2-8993.
WANTED: Harmon-Kordon F 50 XK or F 500X FM stereo tuner. Greene. 838-3164.







Bob Nye, Langley Researcher Staff Photographer, was aboard the USS Wasp which picked up Astronauts James A. McDivitt and Edward H. White after their four-day flight in space. Top left photograph - Photographers aboard the Wasp get ready for the reentry of GT-4. Top right photograph - Helicopters leave the flight deck of the Wasp for the recovery area. The two center photographs show distant and close-up views of the GT-4 spacecraft as the underwater demolition team secures the spacecraft for pick-up. Bottom left photograph - The GT-4 spacecraft is hauled aboard the carrier. Bottom right photograph - Captain A. W. Conger, Captain of the USS Wasp, greets Astronauts White and McDivitt. The spacecraft made 62-orbits of the earth and traveled 1.7 million miles.

ABC'S OF SUCCESSFUL SUGGESTING

Here are the ABC's of successful suggesting.

Ask questions: Who? What? When? Why? Where? How?

Believe in yourself. We believe that your ideas can make this organization a more efficient and better place to work.

Consider every aspect of your work. There's always a better way.

Draw from past experience. Ideas don't have to be original - just so they're good and are not already being used.

Eliminate unnecessary parts of your job such as duplications, wasted time or motion.

Focus your attention on your immediate work area. You know it best.

Gain extra income through your ideas.

Hard work can often be lightened by using your ideas.

Improve your opportunities for promotion. Adopted suggestions are inserted in your official personnel folder as proof of your initiative and ability.

Join the parade of successful suggesters. There's room for you at the next awards ceremony.

Keep plugging. If one idea doesn't solve the problem attack it from another angle.

Let your supervisor help you work out details.

Midget ideas can lead to giant improvements. No idea is too small to be considered.

National security is strengthened by a more efficient Federal Government. Do your part.

Other peoples' gripes are clues that things may need improving. Suggest a remedy today.

Prepare suggestions completely. Your supervisors can evaluate your ideas better if they're sure of what you mean.

Quit envying the fellow who gets an award. Turn in your ideas regularly, and you'll come up with a winner, too.

Remember to write down your ideas so you won't forget them.

Study each step of your work. Strive to better conditions in your work area.

Turn in a suggestion this week.

Use all available help. Your past experience, reading, and thinking will help you.

Verify facts with people who know. Don't submit "half-baked" ideas or suggest something that is already being done.

Wage a private war against unnecessary paperwork, inefficiency and waste through the suggestion program.

X-ray problems to find best solutions.

You are the key to a successful suggestion program.

Zoom your income by turning in at least one suggestion each month.

FOR SALE: Admiral air conditioner, 110-volt, 3/4 ton - $65; full-size electric stove - $75. Ransdell, 877-0008.

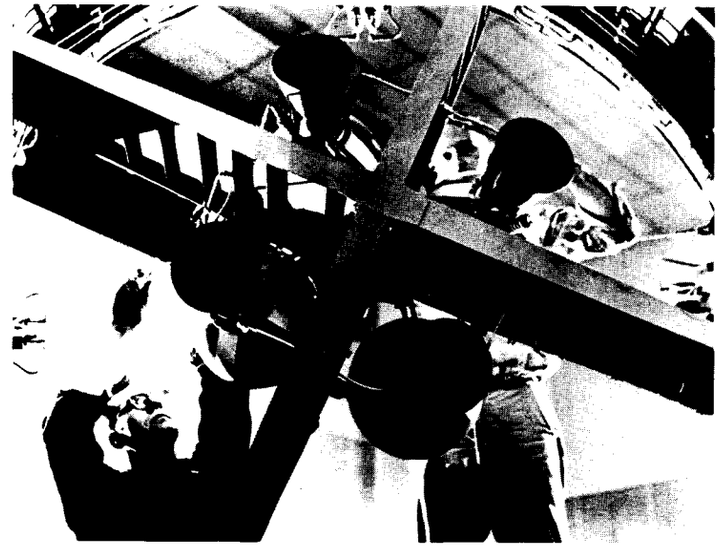
FOR SALE: Four-space lot in Parklawn Memorial Park at original 1958 price. Pilny, 838-2801.

FOR SALE: Philco refrigerator and Motorola 21-inch TV. Adamson, PA 2-8719.

WANTED: Good late model refrigerator, 2-door type preferred. Coward, 595-2437.

FOR SALE: Piston-type well pump - $15. Christian, PA 2-8306.

FOR SALE: Sofa bed and matching chair, two 3/4-size beds, all for $100; Hi-Fi record player with 4 speakers - $25. Newman, 722-2062.



GIVING GEMINI THE "BRAKES" - Gemini spacecraft retrorockets are test mounted in the Elkton, Maryland, plant of Thiokol Chemical Corporation, builders of the rockets used by NASA. The four rockets aboard a Gemini spacecraft act as its braking system, slowing down its orbit enough to permit the Gemini's descent to earth.

GEMINI GETS THE BRAKES

The Gemini retrograde rocket system is a space age version of an automobile braking system. NASA's Gemini spacecraft, like any other satellite, stays in orbit because its velocity, or speed, balances the gravitational pull of the earth, much the same principle as though you were to swing a ball around your head on the end of a string.

If you swing the ball at just the right speed, it won't fall or break the string and fly off.

To return the satellite, or the ball, you must either slow it down so it falls back or increase the pull so it is forced back with the ball and string. The satellite is more difficult - you can't increase the pull of the earth's gravity, so you must slow down the satellite. This is where the "brakes" come into the picture.

There is only one practical way to slow the satellite - produce a force opposite to its forward motion.

This is done with retrorockets - thrusting in a direction which tends to drive the spacecraft backwards but providing only enough power to slow it down.

With the satellite moving more slowly, gravity begins to pull it to earth.

The trick is to provide just enough power to start the spacecraft falling at a predictable angle and speed so that it lands where the recovery team is waiting. To do this requires extreme precision in every step of the retrograde system.

The rockets must receive the signal to fire at exactly the right instant. Having received the signal, they must ignite within a few milliseconds and burn for a predictable period of time; they must deliver the precise amount of thrust required and the performance of each of the four retro rockets must be the same.

FOR SALE: 1960 Renault. Rhinehart, 898-6596.

FOR SALE: Four commercial and two residential lots on 60-foot canal, 40 miles north of St. Petersburg, Florida. Pincus, 245-0974.

KNOW YOUR CREDIT UNION

June, July, and August: prime time for that vacation you owe yourself and that experts in such matters say you should have. The mind and body need a change from the usual routine.

It is this change that refreshes you and restores the energy necessary to re-tackle your responsibilities with vim and enthusiasm. The change itself doesn't matter so much-mountain or beach, World's Fair or camping out - so long as it is of reasonable duration, is something you enjoy, and is different from the daily grind. Preferably, it should include a change of scenery. Staying at home too often leads to the doing of odd jobs, the catching-up with the yard, etc. Things necessary, of course, but hardly designed to revitalize the spirit.

Unfortunately, as a general rule, the further you go and the longer your stay, the more it costs. With vacation-time already here, freedom of choice this year may be limited by financial considerations. The thing to do is work out a realistic vacation plan that fits your needs and those of your family and, at the sametime, is practical from a financial point of view. However, don't pinch to the extent of making it impossible to obtain worthwhile benefits. Let your Credit Union help if there is still a money problem. A vacation, within reason, is a good investment.

Then, next year, widen your range of choices by starting a vacation fund now. It is easy to save at your Credit Union and you will be pleasantly surprised at how quickly the dollars add up. The money will be available when you want it and you will come much, much closer to having a vacation controlled by personal desires instead of dollar costs. Give it a "go." You will be glad later.

Regarding suggestions for subject areas to be discussed (see May 21 issue), Rowena R. Grant, Research Models and Facilities Division, is the first $5 winner. The question, "What do the T, Y, and Z blocks stand for on the right side of the Cash Received Voucher?" hardly qualifies, but her interest, enthusiasm, and promptness do. The reason there is some doubt as to the question qualifying is that everyone who needs to know, already does. However, on the theory that others besides Mrs. Grant have wondered about it, the letters indicate different types of loans just as the more familiar suffix X identifies a car loan. The letter T similarly identifies a trailer loan, Y a real estate/construction loan, and Z a boat loan. Remember, the appropriate suffix must be added to your account number when making a payment to insure proper credit. This is most important so watch it, please. A separate voucher is required for each suffix-type loan. Now, who is next?

FOR SALE: Guitar and amplifier. Brewer, 245-4769.

FOR SALE: 3-bedroom, 1-1/2 bath brick rancher in Windsor Great Park. Lee, 877-1000.

WANTED: Ride to North Florida July 4 week-end. Karen Rackley, PA 3-8933.

WANTED: Driving combination from Riverdale to W.A. on 8 shift. Schoenster, 3451.

WANTED: Driving combination from Southampton to E.A. on 8 shift. Singleton, 2258.

WANTED: One or two alternate drivers from Todds Lane near Whealton Rd. to W.A. on 7:30 shift. Youngblood, 4691.

WANTED: Ride or driving combination from Hallwood to W.A. on 8 shift. Henk, 4826 or 851-2226.

The American National Red Cross

Certificate of Appreciation

to

National Aeronautics and Space Administration

Langley, Virginia

for outstanding cooperation with the

Tidewater

Regional Blood Program

June 1965

Date

J. H. Wilson II

E. Roland Harriman

Chairman

The above certificate of appreciation was recently presented to Center employees for their outstanding participation in the Tidewater Regional Blood Program. The Bloodmobile will again visit the Center on July 7. Additional donors are needed to help meet the Center's quota. Those who have not registered to donate blood and wish to do so may call East Dispensary, telephone 2243.

RIEKE NAMED TO NEW POST

William B. Rieke, NASA's Deputy Administrator for Management in the Office of Manned Space Flight, has been appointed Deputy Associate Administrator for Industry Affairs.

He will replace George Friedl Jr., who is returning to his home in California. Friedl has held the post since June 1964 and will continue to serve NASA as a consultant.

In his new position, Rieke will be responsible for effective relations between NASA and industry, and will direct the activities of the Offices of Procurement, Labor Relations, Reliability and Quality Assurance, and Construction, as well as for the Western Operations Office and the Executive Secretariat of the Inventions and Contributions Board.

Prior to joining NASA and the Office of Manned Space Flight in November 1964, Rieke was president of Lockheed Aircraft International which conducts manufacturing and licensing operations throughout the world. He also was an officer and director of affiliated companies in the international area. Earlier he had been vice-president of Lockheed-Georgia Company.

WANTED: Passengers from Norfolk to W.A. on 8 shift. Childs, 4481 or 4591.

WANTED: Ride or alternate driver from Whealton Rd. to E.A. on 8 shift. Johnson, 2651.

AIAA ELECTS NEW OFFICERS

(Continued from page 1)

recognized as an expert in the field of vacuum effects.

He is a member of the Committee on Space Simulation of the American Society for Testing Materials and the Langley member of the NASA working group on Space Environment Simulation.

Sandahl, a research scientist for over 20 years at the Center, was born in Chicago, Illinois, on January 31, 1921. He was graduated with a B.S. degree in Mechanical Engineering from Iowa State College in 1942.

He joined the Center staff in September 1942 and was assigned to the Propeller Research Tunnel. In 1946 he was transferred to the Pilotless Aircraft Research Division. In August 1950 he became head of the Aircraft Components Section of that division and in December 1958 he was made acting head of the Performance Aerodynamics Branch. Through reorganization in 1960 the Pilotless Aircraft Research Division became the Applied Materials and Physics Division and Sandahl was made head of the Vehicle Performance Branch.

Michael, a research scientist for more than 15 years at the Langley Center, was born in Richmond on December 10, 1926. He graduated from public school in Richmond and was awarded a B.S. degree in Engineering from Prince-University in 1948. He earned his M.S. degree in Aeronautical Engineering from the University of Virginia in 1951 and a M.A. in Physics from the College of William and Mary in 1962, both through Langley's graduate study program.

Michael was appointed Head of the Mission Analysis Section, Space Mechanics Division, in July 1960. As section head he is the group leader of research engineers engaged in lunar and planetary mission studies with application to manned and instrumented missions.

DR. THOMPSON REPRESENTS NASA

(Continued from page 1)

for and faced the risks of a mission of great national significance and have completed it with a competence that brings great credit to themselves and to the nation.

"They were prepared for that mission by years of training and experience as test pilots in the Air Force and by extensive specialized training of the NASA's astronaut program; but the education they received at the University of Michigan certainly played an important part in preparing them for the mission."

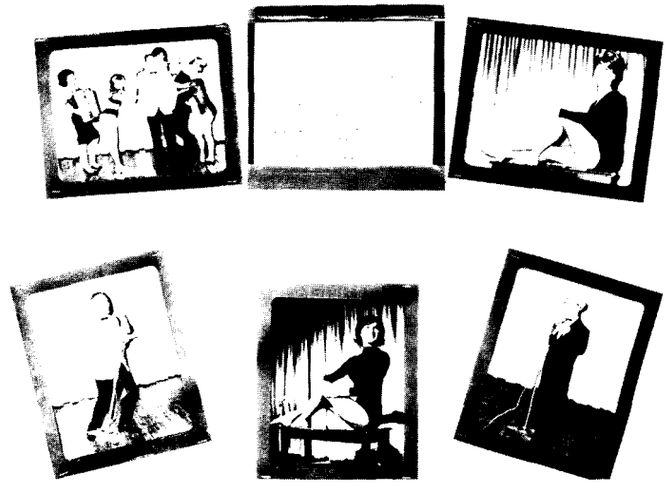
Describing the role of a great university as vital in meeting the challenges of today, Dr. Thompson told his Michigan audience that the NASA is placing much dependence on the educational institutions of this country to develop the broad base of advanced education and basic scientific and technological knowledge required for a successful aerospace program.

FOR SALE: 2-bedroom home on 2 lots at Gloucester Point, also 5-acre waterfront lot on York River. James, 642-4109.

WANTED: Someone to take over lease on 2-bedroom apartment at Presidential Arms. Bradford, 595-2358.

FOR SALE: Complete oil, hot-water heating system, 40-gallon stone-steel hot water storage tank, wall recessed radiators, also 36-inch attic exhaust fan. Evans, PA 2-4676.

DANCE PLANNED JUNE 26



The Activities Association will sponsor a dance and full variety revue, "That's Entertainment," on Saturday, June 26 at the Activities Building. Dancing will be from 9 p.m. until 1 a.m.

Dance music for the evening will be furnished by the Tac Tones. The revue will start at 10:30 p.m. and last one hour. Master of Ceremony for the show will be Jack Reddy who recently won the Air Force World Wide Talent Contest, displaying his talents in the novelty category.

The cast for the show includes Carol Verser, Bob Garel, Beverly Lingburg, Judy White and Brenda McCoy. Carol and her accordian are a featured act at the Golden Horseshoe in Williamsburg. Bob sings and has served as host on his own TV show on a local network in the Phillipine Islands.

The acts are backed by the fine dancing of Judy White, Brenda McCoy and Beverly Lindburg who also accompanies on her steel guitar. Beverly is a former Miss Teen Age America and was second runner-up in the recent Miss Hampton Roads Contest.

Tickets are three dollars per couple and may be purchased from the following members of the Executive Board: Herbert Pelton, Building 1220; A. J. Voitlein, Building 1244; Virginia LaPrade, Building 1152; Ray Goodman, Building 1232; Herbert Boulter, Building 1230; Humbert Rockey, Building 1230; Linda Johnson, Building 1218; Betty Tholl, Building 1251; and Richard Kurtz, Building 586.

RETIRED EMPLOYEE DIES

John H. Hanks, retired employee, died on June 9 following a brief illness.

Hanks was born December 15, 1894 in Carroll County. He graduated from Galax High School and attended Virginia Polytechnic Institute. He served in the Signal Corps from August 1917 to February 1919 and was stationed at Langley Field. Following his discharge he accepted a job with the Naval Ordnance Base in Norfolk and in 1921 he was transferred to the Langley Center and was assigned to the Engine Laboratory.

In 1942 he transferred to the Lewis Research Center in Cleveland and a year later returned to Langley where he was assigned to the Full-Scale Tunnel. He was later transferred to Induction Aerodynamics where he worked until his retirement on November 29, 1950.

Langley Researcher

VOLUME 4, NUMBER 13 LANGLEY RESEARCH CENTER JULY 2, 1965

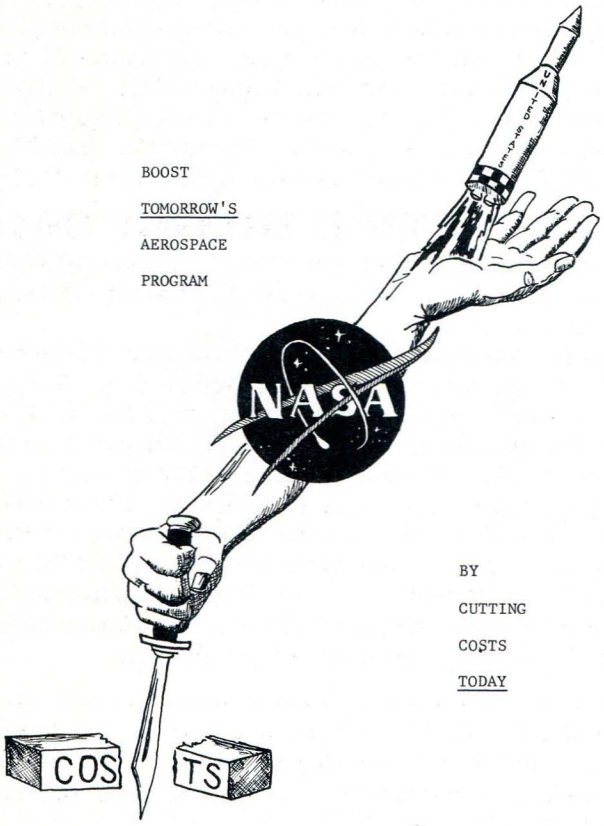
J. B. WILLIAMS WINS CENTER'S SLOGAN AND SYMBOL CONTEST

James B. Williams, Instrument Research Division, was selected the winner at the Center in the NASA-wide contest to provide NASA with a Cost Reduction Symbol and Slogan. Dr. Floyd L. Thompson, Center Director, presented Williams an award of $375.

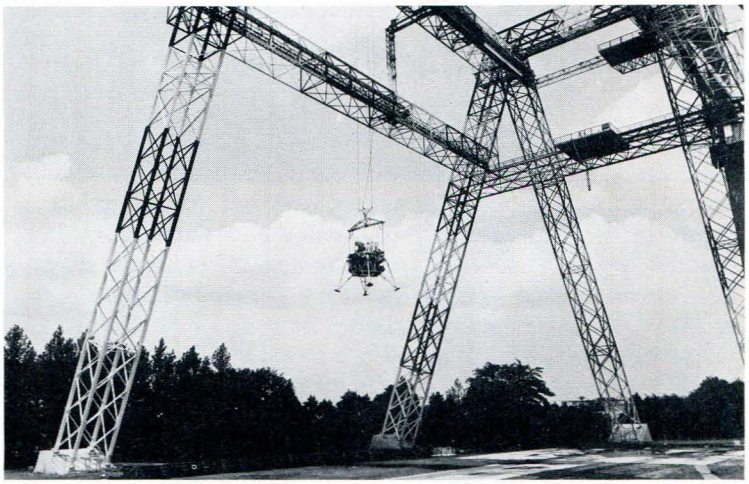
Williams' winning entry, which is reproducted below, will compete in a NASA-wide contest with a cash award of $500 each to the originators of the winning slogan and the winning symbol or a total of $1000 if the winning slogan and symbol are submitted as one entry.

Dr. Thompson also presented awards of $25 each to three runner-ups. They included Jackie A. Butler, Flight Vehicles and Systems Division, who entered the slogan "Economize Without Compromise," Clarence M. Cole, Mechanical Service Division, who won with a symbol and slogan, and Wesley T. Berryman, Research Reports Division, who also won with a symbol and slogan. Reproductions of Cole's and Berryman's entries are shown on Page 6.

In making the awards Dr. Thompson said, "The purpose of the contest is to solicit ideas which will assist in the selection of a NASA Cost Reduction Symbol and a NASA Cost Reduction Slogan. It is also anticipated that the contest will stimulate greater awareness of and participation in the NASA Cost Reduction Program."



LUNAR LANDING RESEARCH FACILITY NOW OPERATING



The Lunar Landing Research Facility at Langley Research Center has been put into operation. The facility, 250 feet high and 400 feet long, provides a controlled laboratory in which NASA scientists will work with research pilots to explore and develop techniques for landing a rocket-powered vehicle on the Moon, where the gravity is only one-sixth as strong as on Earth.

The Lunar Landing Research Facility, a controlled laboratory for exploring and developing techniques for landing a rocket-powered vehicle on the Moon, has been put into operation at the Langley Research Center.

The $3.5 million facility includes a rocket-powered piloted flight test vehicle which is operated while partially supported from a 250-foot high, 400-foot long gantry structure to simulate the one-sixth earth gravity of the Moon in research to obtain data on the problems of lunar landing.

Donald E. Hewes, head of the Spacecraft Research Branch, Space Mechanics Division, said that test vehicle and gantry systems checks have been completed satisfactorily and NASA pilots are now beginning data-gathering flights at the research facility.

The vehicle, designed primarily as a multipurpose flight-test bed, is not an exact replica of the Apollo lunar excursion module which will actually land on the Moon - but has essentially the same flight characteristics as the LEM. It provides, with proper adjustments, the same performance, control characteristics, and cockpit visibility.

There is a two-man pilot compartment in the vehicle, but only one pilot who occupies the seat on the right is required in the current preliminary flight research program, which is concerned mainly with the handling qualities of the craft in simulated lunar landings.

In the initial research flights with the test vehicle, which is equipped with hydrogen peroxide motors to provide the

(Continued on page 6)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2375.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEWLY WEDS. . .Betty Tholl, Full-Scale Research Division, and Thayer Sheets, Personnel Division, were married on June 19 at Aldersgate Methodist Church. Russell Sorrells, Full-Scale Research, served as an usher. . . Carolyn DeAlba, Flight Mechanics and Technology Division, took her final vows with Joseph H. Schaffer on June 2. . .Remona Reel, Administrative Services Division, was married to Delmas Sturgill on June 19. . .Wedding bells rang on Saturday, June 26 when Russell Sorrells, Full-Scale Research, took his final vows with Lucile Faulkner, Hampton, at the home of the bride's uncle in Petersburg, Tennessee.

REPRESENTATIVE TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on July 13 from 3 p.m. until 4 p.m. Employees having problems or questions concerning their plan may call Lois Harris, 2523, for an appointment.

NEW HEIRESS. . .Announcing the birth of a seven pound, eleven ounce daughter, Laura Ann, on June 7 is Sheldon Kopelson, Analysis and Computation Division.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, July 6 at 7 p.m. at the Central Labor Union Hall, Newport News.

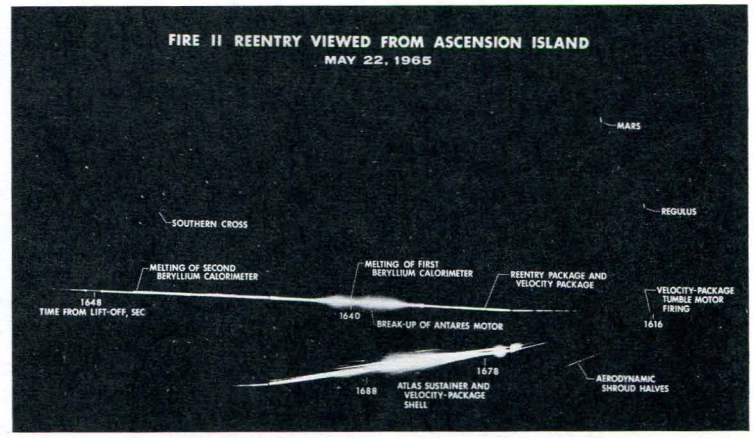
ENGAGEMENT. . .Making plans to desert the bachelor ranks is James E. Gardner, Structures Research Division. He is engaged to Sandra Ann Richards, Newport News, and plans call for an August wedding.

LITTERING. . .Staff members are reminded that the depositing, dumping or otherwise disposing of trash, garbage, or other unsightly matter on Langley Air Force Base and other areas under the jurisdiction of the commander, Langley Air Force Base, except in a proper receptacle for same, is prohibited.

PROFESSOR TO VISIT HERE

Dr. James B. Eades, Head of the Department of Aerospace Engineering, Virginia Polytechnic Institute, will visit the Center on Tuesday, July 13, to discuss the graduate program in Aerospace Engineering.

Employees interested in an interview with Dr. Eades should call the Training Office, telephone 2611, for an appointment.



A NASA flight experiment - Project FIRE - created a brilliant meteoric display in the night-time skies near Ascension Island as a heavily-instrumented reentry package was driven into the atmosphere at more than 25,400 miles per hour. During the successful experiment, extensive heating measurements were recorded and telemetered to ground stations by the 200-pound spacecraft. The long horizontal streak in this composite photograph shows the FIRE II spacecraft plunging into the atmosphere at a speed higher than that to be experienced by a space vehicle returning from a lunar mission. It is the trail left by the FIRE reentry package and the separated Antares II rocket motor which provided the very high speed required. Both objects travelled a similar path during reentry. A brief burst of light at the far right records the firing of small tumble rocket motors to assure wide separation between the instrumented spacecraft and the Antares II. First radiation from air heated by the reentering objects begins at about 300,000 feet altitude. Flares associated with the break-up of the Antares motor and with the removal of heat shields from the reentry package are apparent near the middle of the main reentry track. The lower streaks were made by the Atlas launch vehicle and the velocity-package airframe shell as they reentered at a steeper angle some 50 seconds later and at a lower speed. The Project FIRE reentry package was flown along a 5,000 mile ballistic trajectory by an Atlas D launch vehicle from Cape Kennedy on May 22. Project FIRE was managed by the Langley Research Center.

APPRENTICE HONOR ROLL

Seventeen apprentices completed the spring semester with an average of 97 of better. Members of the honor roll are as follows:

John D. Antinori, David S. Coombs, Earl S. Knight, and Harold V. Stanley, all of Heavy Machine Shop; David Duxbury, 11-inch Hypersonic Tunnel; William W. Fernald, Light Machine Shop; Glenn A. Gates, Fatigue Laboratory; Stephen Irick, Dynamic Vehicle Section; James J. Kiss, Structures Laboratory; Carter F. Lewis, Magnetoplasmadynamics; Allan N. Milton, Charles M. Southall, and Francis D. Stone, General Electrical Service; Donald R. Nelson, Research Equipment Service; Cecil G. Phillips, IRD - Microelectronics; Ceylon C. Short, Fabrication Shop, and Larry W. Swartz, Electrical Flight Systems.

FOR SALE OR RENT: 3-bedroom brick and frame rancher in Foxbranch. Cottle, 851-0301 after 4:30.

FOR SALE: Westinghouse air conditioner, 10,000 btu - $115. Lambiotte, 596-3512.

PROFESSORS ASSIGNED TO LANGLEY

Sixteen engineering and science professors have been assigned to the Langley Research Center under the ASEE-NASA Summer Institute for Engineering Teachers. The visiting professors started their assignment in June and will be at the Center until mid-August.

The purpose of the program is to bring well qualified young engineering and science teachers into intimate contact with developments in space science and technology through research and study

The program is a joint project by the American Society for Engineering Education and NASA. Directors for the Langley program are Dr. Edward C. Stevenson, Professor of Electrical Engineering, University of Virginia, and Dr. John E. Duberg, Langley Assistant Director.

The following professors have been assigned to Langley: Dr. Ming M. Chen, Boston University; Dr. David H. Cheng, City College of New York; Dr. Richard T. Eppink, University of Virginia; Dr. Gennaro L. Goglia, Old Dominion College; Dr. Franklin D. Hart, North Carolina State College; Dr. Henry A. Lackner, Old Dominion College; Dr. James C. Lauffenburger, Canisius College, Dr. Swaminathan Madhu, Rutgers University; Dr. Peter N. Marinos, Clemson College; Dr. Thomas G. McWilliams Jr., Old Dominion College; Dr. Edwin K. Parks, University of Arizona; Dr. Ralph W. Pike, Louisiana State University; Dr. Stanley P. Reyle, Rutgers University; Dr. Charles G. Richards, University of New Mexico; Dr. James P. Wightman, Virginia Polytechnic Institute, and Dr. Roy L. Williams, Old Dominion College.

SEAMANS RECEIVES AWARD

Dr. Robert C. Seamans Jr., NASA Associate Administrator, received the New England Aero Club's Godfrey

Sixteen engineering and science professors have been as signed to the Langley Research Center under the ASEE NASA Summer Institute for Engineering Teachers. To photograph - A group of professors register before attend ing a briefing. Center photograph - Dr. Floyd L. Thompson Center Director, welcomes the group. Bottom photograph Dr. John E. Duberg (left) and Dr. Edward C. Stevenso (right), Directors of the Langley program, talk with Dr William McFarlane, Director of the Virginia Associate Research Center (VARC).

KNOW YOUR CREDIT UNION

A member writes, with obvious sincerity, "Why squander assets of the Credit Union on games and hand-outs which have little if any potential of improving the financial posture of the organization?" As phrased, that is a tough one for this columnist to answer. There is a distinct resemblance to the classic, "Have you stopped beating your wife?" But throw out the "color" words which are the result of personal conviction and eliminate the assumption of a fact not in evidence (shades of Perry Mason), and what do you have? Just this: "Why spend Credit Union money on such items as awards for displaying a bumper-decal (game/promotion) and the new quarterly bulletin, "Credit Union News" (hand-outs/education)?"

In that form, the same thought may have occurred to many members - most particularly to the older ones who over the years have been the backbone of the Credit Union here at Langley. Education and promotion, as currently conducted, are relatively new departures. But times and circumstances change; trust your Board to be alert and to recognize a new need when they see one. The answer to the reconstituted question is relatively easy: In no other way can worthwhile results be obtained so cheaply. Education and promotion pay-off in the business world, and they pay-off in the operation of a credit union. The LFCU is now a $5 million-dollar concern thanks, primarily, to what the questioned "fertilizer" has accomplished in the past two years. Take a look at the following table:

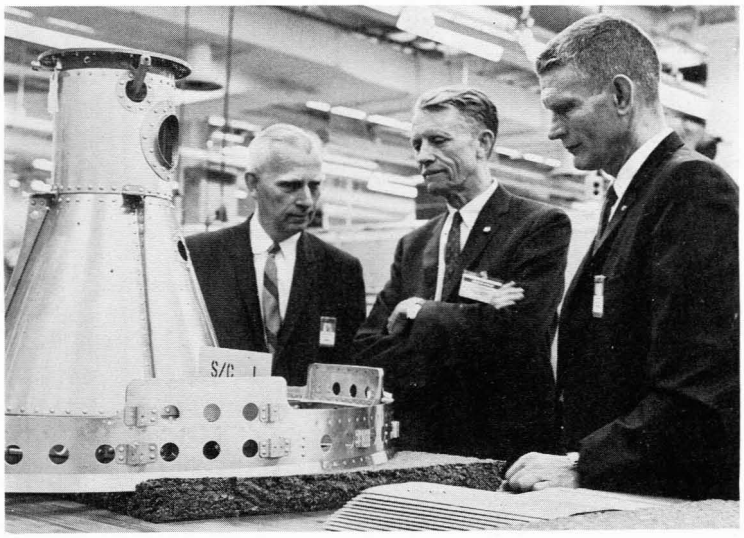
% Increase in Selected Factors at Year-End

	Members	Shares	Loans	Assets
Avg. '60-'61-'62	6.4	13.3	10.2	14.7
'63 over '62	16.8	32.4	30.3	32.2
'64 over '63	11.6	38.4	23.9	40.6

And take another look at the dollar totals under discussion. In 1964, $2755 was spent on promotion and membership education. In 1965, the budgeted figure is $3000. It is obvious that these amounts cannot go entirely to swell dividends (over the usual 5%) or reduce interest rates. There are still many, many people on the Base who are unaware of all the benefits inherent in membership in the Credit Union. And there are some, probably, who do not even know that the Credit Union exists. Educational and promotional efforts keep this in mind. Together, they constitute the most effective, and almost only, way that these individuals can be rescued from outer-darkness and brought into the credit union fold.

Or, look at it from a slightly different angle. The $300 projected for 1965 figures out at an additional $.003 dividend per share year. If the entire $3000 should be diverted to dividends, a member with the maximum of $10,000 in shares (all year) would benefit to the extent of $6. But suppose another member, as a result of a paragraph in the "News", gets a better picture of the insurance program and makes a change that gives his family a few hundred dollars more protection at no out-of-pocket cost. Maybe (hopefully) he never collects, but (truthfully) which constitutes a better expenditure of Credit Union funds: the $6 to each $10,000 share holder or the $50 a year that the "News" costs ($10.50 for paper each quarter, ink, and a couple of hours of operator time)?

Finally, still keeping the original $2755 in mind, the cost in 1964 of promotion/membership education was 0.8% of total income. The national average for credit unions of our size is 1.6%. Once again, it is recommended that all members believe in, and appreciate, the care with which their Directors weigh the pros and cons of each action they authorize. According to the situation, they may move in any one of several different directions but the one chosen, each and every member may rest assured, is not overboard!



Dr. Floyd L. Thompson (center), Director of the Langley Center, inspects a portion of the first Lunar Orbiter under construction at the Boeing factory in Seattle, Washington. Shown with Dr. Thompson are Robert Heberg (left), Boeing's Lunar Orbiter Program Manager, and William Kaseburg, Manufacturing Manager for the Lunar Orbiter. During the quarterly review of the Lunar Orbiter Program, Dr. Thompson inspected four spacecraft in early stages of assembly at Boeing. Other members of the inspection group were Eugene C. Draley, Assistant Director for Flight Projects; Francis B. Smith, Assistant Director, and Clifford H. Nelson, Langley's Manager for the Lunar Orbiter.

BROWN RETIRES FROM NASA

Clarence L. Brown, Aerospace Metals Processor Leader in the Materials Processing and Development Section, Mechanical Service Division, retired from the Center on June 25 after over 23 years of Federal Service.

Brown was born January 13, 1913 in Glen Wilton, Virginia. He attended Glen Wilton High School and worked for the Quartermaster Corps, Ft. Monroe, and the Norfolk Navy Yard in Portsmouth, before joining the Center staff on May 26, 1943 as a mechanic.

HAROLD C. EADIE DIES

Harold C. Eadie, Electrician in the Electrical Shop Section, Electrical Systems Division, died June 24 in the Medical College of Virginia Hospital, Richmond.

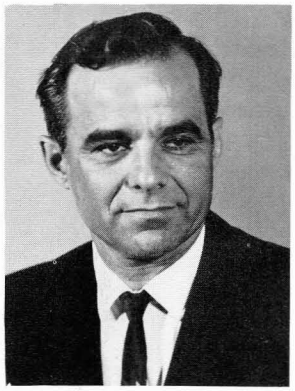
Eadie was born February 16, 1914 in San Francisco, California. He graduated from New Rochelle High School in New Rochelle, New York, and served in the U.S. Army from February 18, 1943 to November 26, 1945. He joined the Center staff on April 5, 1946 as an electrician.

He is survived by his wife, Muriel R. Eadie, who works in the Procurement Division.

FOR SALE: Set of golf clubs. Quisenberry. 838-1575.
FOR SALE: 14-foot outboard runabout, 3 bronze props for 25-40 hp motor. Lee, PA 3-3884.

Daniel P. Hutts

William M. Rollins


Karl Lambroff

Lucy W. Bainbridge

Charles H. Whitlock

8 EMPLOYEES RECEIVE AWARDS

Eight staff members recently received letters of commendation and cash awards from the Langley Incentive Awards Committee.

Daniel P. Hutts, Mechanical Service Division, and Arthur K. L. Reilly, Space Mechanics Division, received Special Service Awards and Sustained Superior Performance Awards were presented to William M. Rollins, Mechanical Service Division; Karl Lambroff, Mechanical Service; Lucy W. Bainbridge, Administrative Services Division; Charles H. Whitlock, Applied Materials and Physics Division; James R. Hall, Scout Project Office, and Ralph L. Hearn, Procurement Division.

The citations read as follows:

Hutts - "For his contributions to the development of techniques for the construction of precision sub-miniature supersonic sonic boom model aircraft."

Rollins - "For an outstanding performance characterized by his ingenuity and expedience in the manufacturing of the 1/10 scale dynamic replica model of the Apollo BP-13 assembly."

Lambroff - "For his superior performance in devising and developing a method of determining the inside contour of Tyco rocket motors."

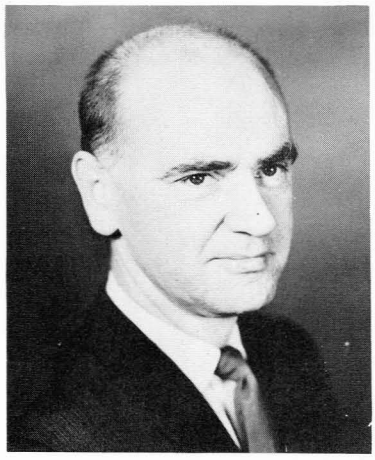
Mrs. Bainbridge - "For her exceptional ability in coordinating and supervising the work of a large group of clerical personnel which accomplished an exceptionally large volume of work."

Whitlock - "For originating a novel method of determination or reentry body motions, while engaged in the supervision of a project of greater than average difficulty, and for his unusual competence in the documentation of his research work."

Hall - "For his superior performance in coordinating the planning and supervising the technical integration of the Scout reliability improvement program."

Hearn -"For his outstanding performance in effecting greater efficiency and economy in the storage and issue of stores materials."

Reilly - "For his exceptional interest, initiative and ability in assisting in the operation of the space rendezvous simulator and for noteworthy contributions in the development of a graphical solution for a co-planar earth rendezvous technique."


James R. Hall

Ralph L. Hearn

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of July 5:

Monday - HOLIDAY

Tuesday - Minestrone soup, Spanish pot roast, baked Canadian bacon, fried fish sticks, tamale pie.

Wednesday - Split green pea soup, country style steak, roast loin of pork, fried chicken, macaroni and wieners.

Thursday - Vegetable-beef soup, grilled steak, chicken pot pie, pork chow mein, fish cakes and coleslaw.

Friday - Clam chowder, roast beef, broiled fish, fried fish, franks and beans.

The menu for the week of July 12 is as follows:

Monday - Tomato-barley soup, roast veal with dressing, grilled pork steak, spaghetti with meat sauce, cheese ravioli.

Tuesday - Puree of bean soup, Swiss steak, fried shrimp, liver and onions, barbequed sandwich.

Wednesday - Consomme julienne, baked Virginia ham, breaded veal steak, stuffed pepper, chili con carne.

Thursday - Vegetable-beef soup, grilled steak, beef pot pie, fried chicken, baked hash.

Friday - Clam chowder, roast beef, broiled fish, fried fish, cheeseburger.

FOR SALE: Living room suite, $50. Hamer, LY 6-6048.

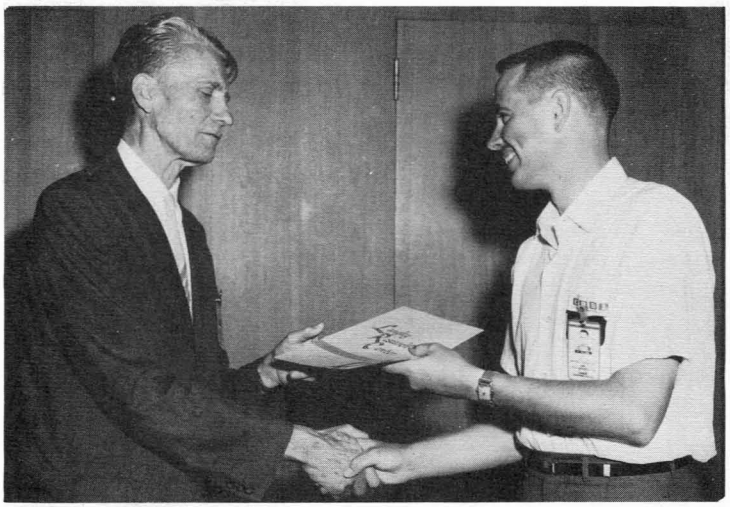
FOR SALE: 1955 Plymouth, $100. Ellis, 898-5498.

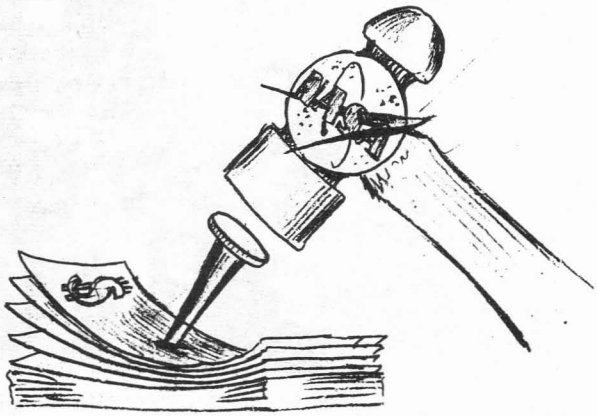
FOR SALE: 30-inch Westinghouse electric range. Hurt, 3306 Butternut Drive.

FOR SALE: 3-piece maple living room suite - $40. Firman, 868-9249.

FOR SALE: 16-foot cabin cruiser with fiberglas hull and trailer. Diggs. 868-3831.

FOR RENT: 3-room unfurnished apartment, all utilities, stove and refrigerator furnished. Keffer, PA 2-5001 between 5 and 7 p.m.





"NAIL DOWN LOOSE SPENDING"

In the two top photographs Dr. Floyd L. Thompson, Director, presents awards to the winners in the NASA Slogan and Symbol Contest. James B. Williams (left photo) was first place winner and runner-ups (right photo) were Jackie A. Butler and Clarence M. Cole. Wesley Berryman, also a runner-up, was not present when the photographs were made. Cole's entry is shown in the left photo and Berryman's is shown in the photograph above.

every ¢ent saved Reduces cost

LUNAR LANDING FACILITY

(Continued from page 1)

main thrust and attitude control, a Langley pilot will maneuver the vehicle from the ground below the gantry to a hovering position, then fly it forward in simulated lunar landings.

The test vehicle is designed for flight at forward speeds up to about 17 miles an hour within the confines of the overhead structure, which provides travel of 400 feet down range, 50 feet cross range, and 180 feet vertically.

The research program planned through use of the Lunar Landing Research Facility will include a systematic variation of the vehicle control characteristics, cockpit visibility, flight instrumentation and piloting techniques. For some tests, the cockpit will be modified to duplicate the actual LEM design features.

Data obtained through operation of the lunar lander will supplement other scientific research at Langley in an extensive program in support of the Apollo mission. These include research on the problems of reentry, launch vehicle dynamics, spacecraft structures, lunar orbit and landing approach, rendezvous and docking, walking and performing various tasks on the surface of the Moon, and many other studies conducted through use of simulators, wind tunnels, and specialized laboratories.

In the operation of the Lunar Landing Research Facility, a vertical lifting force equal to five-sixths of the flight vehicle's weight is applied by two cables to oppose the pull of Earth's gravity and simulate the one-sixth gravity at the Moon's surface. The cables are attached to a servo-controlled hoist system in a dolly unit mounted under the traveling bridge; the hoist system is controlled automatically by load cells in each support struct.

VPI EXAMINATION NOTICE

Language examinations at Virginia Polytechnic Institute will be given during the week of July 26. The name of any Langley employee who wishes to take an examination must be submitted to the language department by July 14.

The last preliminary Mathematics examination will be given on August 3 from 1 to 5 p.m. Applications to take the examination must be submitted to the Head of the Mathematics Department by July 26.

MARINER IV NEARS MARS

NASA's Mariner IV is scheduled to begin taking close-up pictures of Mars shortly after 8 p.m. EDT July 14.

During the 25-minute picture-taking period which follows, the spacecraft is expected to take 21 pictures and record the pictures on magnetic tape.

The pictures will be telemetered back to Earth bit by bit over the following 10 days.

Final pictures will be taken near or in the shadowed half of Mars. It is not possible now to determine if the final frames will be usable.

NASA plans to position the televivion camera a few hours prior to encounter by stopping the scan platform at a predetermined angle. If this is successful, the first two pictures will cover a part of the brightest of Mars' deserts, Elysium, and an unusual maria region, Trivium Charontis. This region was discovered recently to be a strong radar backscatterer; that is, the region reflects radar waves as a mirror reflects light.

After the first two frames, the television camera will sweep southward across the desert Zephyria and into Mare Cimmerium. Farther south, over the desert Electris, the atmospheric haze which surrounds the polar cap at this time of the Martian year will be encountered. It is hoped that the camera will cut through this haze sufficiently to allow observation of the edge of the polar cap at 55 degrees south latitude.

The TV scan will continue, now in a southeasterly direction, across the sunset terminator south of Aonius Sinus in the polar cap.

The spacecraft will be 7,000 miles above Mars for the first picture, moving southeastward at 180 degrees east longitude and 40 degrees south latitude. The ground resolution will be best near the middle of the television pass where the camera will be pointed almost straight down. In this region each picture will cover a surface area 120 by 120 miles and it will be possible to resolve prominent surface markings as small as two miles across.

Unlike the almost instantaneous reception of photos from the three Rangers which impacted the Moon, transmission of pictures from Mariner IV will be a complex, time-consuming procedure. It will take eight hours and 20 minutes to transmit a single picture and more than a week to receive 21.

The closest that Earth and Mars ever come in their separate orbits around the Sun is about 35 million miles. Such an event, eagerly awaited by ground-based Mars observers, occurs only once in 15 years. The last time was in 1956. The next time will be in 1971.

Mariner IV, which was launched November 28, 1964, continuously returns to Earth scientific and engineering data from interplanetary space. Millions of measurements have been acquired for scientific analysis.

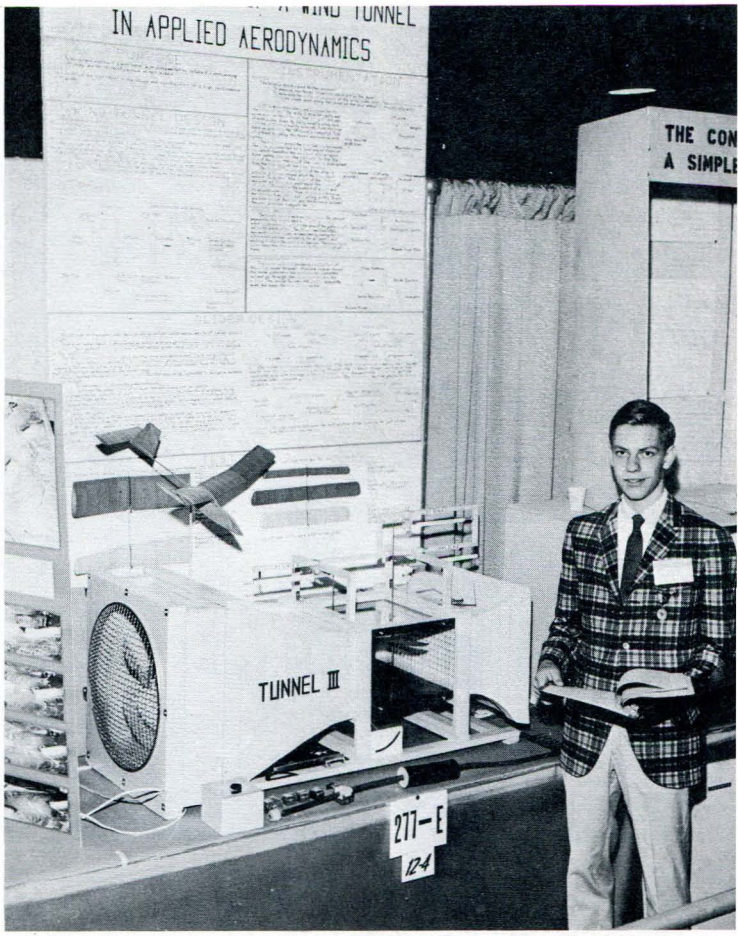
FOR SALE: OR RENT: 3-bedroom, 2-bath house in Hidenwood. Johnson, 596-7486.

FOR SALE: Youth bed with Simmons mattress, $25. Tefteller, 826-6697.

FOR SALE: 1959 Bel Air Chevrolet, 2-door, $550. Garren, LY 6-4931.

FOR SALE: 2-bedroom, 2-1/2-bath, 2-story Colonial house in Beverly Hills. Mackley, CH 4-3971.

FOR SALE: 1958 Jaguar XK150. Senn, PA 3-0566.



John F. Rollins, winner in the National Science Fair-International held in St. Louis, Missouri, in May will be a guest of the Langley Research Center on July 8-9. He will be accompanied by his instructor, Jerry Jeffrey.

NATIONAL SCIENCE FAIR WINNER TO VISIT LANGLEY

John F. Rollins, 17-year old student of Lawton, Oklahoma, will be a guest of the Langley Research Center on July 8-9. His visit is a prize for winning an NASA certificate in Design and Use of a Wind Tunnel in Applied Aeronautics at the National Science Fair-International held in St. Louis, Missouri, in May.

Rollins, whose prize winning project was the design and construction of a low-speed wind tunnel and balance for testing high performance gliders, will be accompanied by his instructor, Jerry Jeffrey

During his tour of the Center, Rollins will talk with engineers and scientists and visit a number of wind tunnels and research facilities.

In an effort to help promote interest in science among high school students, NASA awarded special prizes to a total of six exhibitors at the annual fair in St. Louis. The winners, with teachers of their choice, were invited to visit NASA Centers.

Axel T. Mattson, Langley's Research Specialist for Manned Spacecraft Projects, represented NASA as one of the judges at the 16th National Science Fair-International, and selected Rollins from a large number of contestants who previously had won regional or state science fair awards in the United States and Canada.

Shown above are members of the first group of high school graduates who have been appointed for summer employment at the Center under the President's Youth Opportunity Campaign. The program was designed to help students finance and determine their fields of future education. Members of the group are front row (from left): Estelle B. Barkers, M. Carolyn Lunsford, L. Christine Dawson, Patricia A. McGehee, Patricia A. Leffers, Gail R. Miller, Elsie M. Perry, Mildred J. Williamson, Eileen R. McCall, Alice M. Moore, and Sandra F. Vanderslice. Second row - James A. Newton, James W. Freeman, Robert L. Clark, William J. Shields, H. Dwight Hogge, John F. Batkins, Arthur Edlow, James F. Cross, James Flippen, George S. Bayton, Michael L. Porter, and Sylvia M. Owens. Back row - Pamela J. Smith, Norma J. Kellogg, Bobby L. Tanner, David N. Keithley, John S. Hunt, Wayne Sprinkle, Ann M. McEnerney, C. Sue Willis, Herbert Foreman, Jesse L. Taylor, and Linwood Golden. The group represents the following local high schools: Carver, Hampton, Ferguson, Huntington, Warwick, Johnson, Poquoson, Kecoughtan, York, Phenix, and Newport News. Some of the new employees plan to enter college in the fall.

WILSON HONORED BY NASA

Lt. Gen. Walter K. Wilson Jr., received NASA's medal for Outstanding Leadership on May 28 from James E. Webb, NASA Administrator.

In making the award of one of NASA's highest medals, Webb commended General Wilson "for his outstanding leadership as Chief of Engineers, United States Army, in directing the effective application and utilization of the resources of the Corps of Engineers in the design and construction of facilities critical to the successful exploration of space by the United States and the application of its space technology for the benefit of mankind."

During General Wilson's tenure as Chief of Engineers, to which he was appointed on May 19, 1961, he has worked very closely with NASA in providing constructive support at most of NASA's major centers involving approximately one billion dollars.

WEBSTER NAMED PERSONNEL HEAD

Grove Webster has been appointed director of personnel at NASA Headquarters.

Webster, who first entered Federal service in 1949, joined NASA's personnel department in 1959 and has served as staff assistant to the personnel director and as deputy and acting director. Before joining NASA he was with the Air Force and the Civil Service Commission.

A native of Kingston, New York, Webster attended Virginia Polytechnic Institute and was graduated from Purdue University with a degree in economics and industrial management in 1949. He also received a master's degree in public administration from the Harvard University Graduate School of Public Administration.

FOR RENT: 3-bedroom furnished house off Todds Lane, available Sept. 1 to June 1966. Ayers, 826-3540.

FOR SALE: 1951 Jeep station wagon. Moore, 229-6086.

FOR SALE: W4AVN Offers Clegg 99'er and four element Hy'gain antenna with 6M xpals included - $150. Hofler, 596-8696.

FOR RENT: 3-bedroom unfurnished in Phoebus. Lowe, PA 2-0179.

FOR SALE: 2-1/2-year-old Boxer, $35. Thomson, 596-2832.

DR. EUGENE M. EMME APPH I LaRC W

Langley Researcher

VOLUME 4, NUMBER 14 LANGLEY RESEARCH CENTER JULY 16, 1965

SIX SCIENTISTS-ASTRONAUTS SELECTED FOR APOLLO PROGRAM

One geologist, two physicians and three physicists have been named by NASA to join the 28-man team of astronauts in training at the NASA Manned Spacecraft Center.

The new scientist-astronauts will train as highly specialized crewmen for the Apollo Program. They are:

Owen K. Garriott, 34, of 825 Cedro Way, Stanford, Calif., an associate professor of physics at Stanford University.

Edward G. Gibson, 29, of 2907 Via Corbina, San Clemente, Calif., a senior research scientist at Applied Research Laboratories, Aeronutronic Division, Philco Corporation, Newport Beach, Calif.

Duane E. Graveline, 34, of 705 Windrock Drive, San Antonio, Texas, a flight surgeon at the NASA Manned Spacecraft Center.

Lt. Cdr. Joseph P. Kerwin, 33, of 3056 Lakeshore Blvd., Jacksonville, Florida, staff flight surgeon for Air Wing Four, Cecil Field Naval Air Station, Florida.

Frank Curtis Michel, 31, of 6415 Mercer St., Houston, Texas, an assistant professor of space sciences, Rice University.

Harrison H. Schmitt, 29, of 709 W. Grand Canyon Ave., Flagstaff, Arizona, an astrogeologist for U.S. Geological Survey.

They were chosen from a group of 16 nominees submitted to NASA by the National Academy of Sciences. The Academy screened about 400 applications forwarded by NASA earlier this year.

Two of the six selectees are qualified jet pilots. Kerwin has been a Naval Aviator since 1962; Michel has about 500 hours in Air Force jets. They will report to the Houston space center to begin training this month.

The others will report July 29 to Williams Air Force Base, Arizona, to join an Air Force class of cadets for a year of pilot training, then will continue training at Manned Spacecraft Center.

Garriott and Graveline are private pilots.

The new astronauts were judged by the Academy mainly on their scientific backgrounds, regardless of jet pilot experience, unlike previous astronaut selection programs. They underwent strenuous physical examinations, were given jet indoctrination flights by Manned Spacecraft Center and took extensive tests. Age limit was 34.

Of the other 28 astronauts at MSC, all hold bachelor degrees, ten have master's and one has his doctorate.

Beginning in April 1964, the NASA Office of Space Science and Applications and the National Academy of Sciences cooperated in developing the scientific criteria for the selection process. The Academy conducted the screening for scientific qualification of the applicants. The NASA Office of Manned Space Flight and the Manned Spacecraft Center were responsible for all other aspects of selection criteria and screening.

NINE PRESIDENTIAL CITATIONS PRESENTED TO CENTER GROUPS

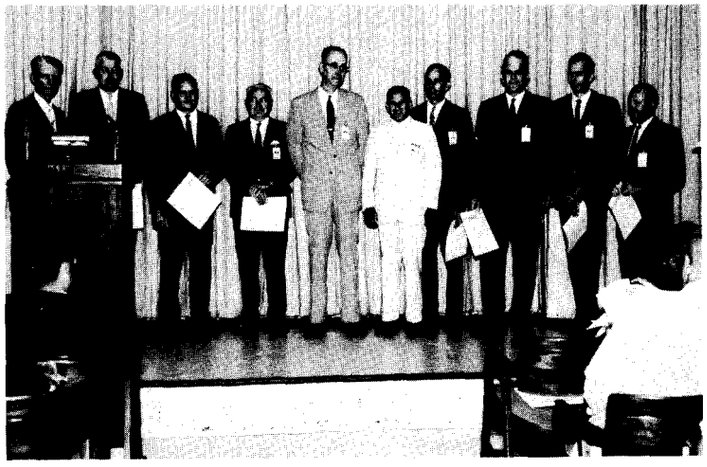
In ceremonies held last week Dr. Floyd L. Thompson, Director, presented Presidential Citations to two organizational units and seven individuals.

The citations are presented "In special recognition of an outstanding contribution to greater economy and improvement in Government operations during the tenth anniversary year of the Federal incentive awards."

Aero-Physics Division received an award for developing a technique for checking internal cooling passages in metal nozzle blocks without opening the blocks. To locate flow restrictions, the thin cover plates are sprayed with a temperature sensitive wax coating which melts at a surface temperature of 128 degrees F. The cooling system is filled with hot tap water and the metal pattern of the wax coating is observed. Failure of these nozzle blocks would result in a six month loss of the use of the equipment. Savings attributable to this technique to date amount to $15,000 and 700 manhours in addition to the intangible savings provided by the availability of the test facility. Accepting the award was Eugene S. Love, Assistant Chief of Aero-Physics.

The Publications Branch of the Photographic Division received a unit award for continuously reducing the cost of printing NASA publications from a cost of $4.15 per thousand units to $2.86 per thousand units. This cost reduction of $1.29 per thousand units applied to the 70,212,000 units

(Continued on page 3)



In ceremonies held last week Dr. Floyd L. Thompson (left), Director, presented Presidential Citations to two organizational units and seven individuals. Receiving the awards were (from left): Eugene S. Love, Aero-Physics Division; Fred N. Rector, Publications Branch; Bernard H. Curran, Harvey T. Forrest, Clyde D. Hall, Edgar B. Kastleberg, and Joseph E. Purgold, Mechanical Service Division, and Garland E. Wilson and William F. Wood Jr., Research Models and Facilities Division.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEWLY WEDS. . .Wedding bells rang on July 10 when Jules M. Miller, Research Staff Office, and Betty Lee Lear, Newport News, were married at the Hampton Baptist Church. Ushers were Thomas Hankinson, Lunar Orbiter Project Office, and William J. Nelson, Aero-Physics Division. . .Carolyn Dale Lively, Instrument Research Division, took her final vows with Lawrence Andrew Schultz, Hampton, on July 10 at St. Rose of Lima Church in Hampton. The bride was given in marriage by her father Dale B. Lively, Mechanical Service Division. Richard J. Re, Full-Scale Research Division, served as an usher.

INSURANCE DEADLINE. . .Staff members are reminded that the deadline for paying their quarterly premiums on the Home Life Insurance policy is July 20.

NEW HEIR. . .Celebrating the birth of a son on June 29 is Wayne Kitchen, Instrument Research Division.

ENGAGED. . .Sporting a new sparkler on the third finger left hand is Lois Harris, Personnel Division. She is engaged to John T. Taylor, Research Models and Facilities Division, and plans call for an early fall wedding.

REPRESENTATIVE TO VISIT HERE. . .Beverly Beale, Government-wide Service Plan representative, will be here on July 27 from 2 p.m. until 3 p.m. Employees having problems or questions concerning the plan may call Lois Harris, 2523, for an appointment.

LECTURE PLANNED. . .As a part of the ASEE-NASA Summer Fellowship Program, Dr. Lotfi A. Zadeh, Chairman of the Department of Electrical Engineering, University of California at Berkley, will lecture on "Some Basic Aspects of Systems Theory" at 1:30 p.m., Thursday, July 29, in Room 214, Building 1229. All Langley employees interested in this topic are invited to attend.

FOR SALE: 1963 Impala SS with 4-speed transmission. Sain, 826-7389.
WANTED: Passengers from Norfolk to W.A. on 8 shift. Childs, 4481 or 4591.
FOR SALE: Transistor powered Motorola car radio - $15. Howell, 851-3069.
FOR SALE: 3-bedroom brick rancher with attached garage. Sterling, 868-9374 after 4 p.m.
FOR SALE: Williamsburg painting by Betty Zoe Miller - $25, 19-inch TV, table model - $10. Andleton, 838-3961.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of July 19:

Monday - Tomato soup, fried clams, grilled pork chops, stuffed pepper, Austrian ravioli.

Tuesday - French onion soup, sliced turkey with dressing, corned beef brisket, Polish sausage, fish cakes.

Wednesday - Chicken-noodle soup, hot roast beef sandwich, grilled ham slice, fried chicken, hot dog.

Thursday - Vegetable-beef soup, grilled steak, barbecued pork chunks over rice, chicken croquettes, tuna noodle casserole.

Friday - Clam chowder, fried oysters, meat loaf, broiled fish, barbecued sandwich.

The menu for the week of July 26 is as follows:

Monday - Cream of tomato soup, Spanish pot roast, grilled Canadian bacon, chicken chow mein, baked hash.

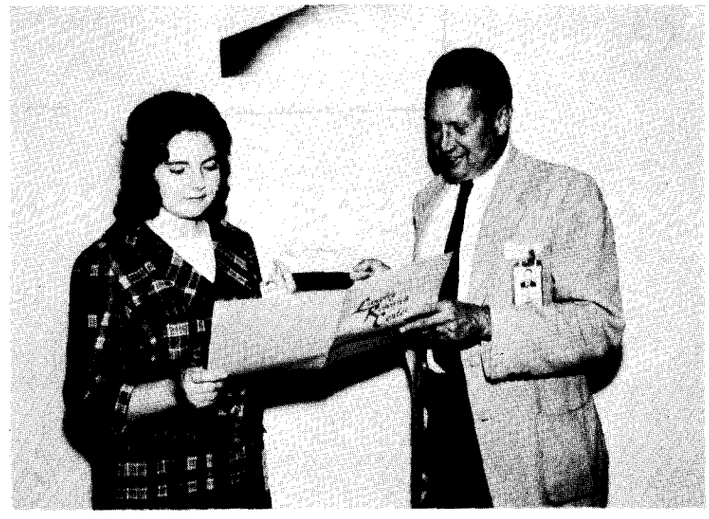
Tuesday - Chicken-rice soup, half-pound chopped steak, chicken and dumplings, fried fish, tamale pie.

Wednesday - Puree of bean soup, roast beef, breaded veal cutlet, ham loaf, grilled cheese sandwich.

Thursday - Vegetable-beef soup, grilled steak, barbecued spare ribs, fried chicken, cheese omelette.

Friday - Clam chowder, roast veal, boiled ham, deep fried shrimp steak, broiled fish, beef ravioli.

FOR SALE: 3-bedroom house in Northampton, pay equity of $900 and $89 monthly payments. Nichols, 826-7547.
FOR SALE: 1953 DeSoto sedan. Mundie, PA 3-4152.
FOR SALE: 2/3-acre lot in Williamsburg area. Eide, 826-2383 after 5 p.m.



Four employees recently received cash awards for suggestions under the NASA Incentive Awards Program. Top left photograph - William B. Mayo (left), Chief of Mechanical Division, presents a check to Floyd M. Lowe for his suggestion concerning a simplified angle of attach mechanism. Top right photograph - Eva B. House receives a check from Edward A. Howe, Chief of Fiscal Division. Eva's suggestion concerned a standard form change. Bottom left photograph - Prentiss Childs (left), receives an award for his film dispenser suggestion from Harry H. Hamilton, Chief of Photographic Division. Bottom right photograph - Mayo presents an award to Waverly L. Whitley. Whitley's suggestion concerned a thermocouple attachment.

NINE PRESIDENTIAL CITATIONS

(Continued from page 1)

printed at Langley in 1964 represents a saving of $90,572. The efficiency of this operation has been recognized by the Joint Committee for Printing who note that the Langley facility may well have the lowest cost in government printing facilities. The award was accepted by Fred N. Rector, Head of Publications Branch.

Receiving Presidential citations and a group achievement award were: Bernard H. Curran, Harvey T. Forrest, Clyde D. Hall, Edgar B. Kastleberg, and Joseph E. Purgold, all of Mechanical Service Division, and Garland E. Wilson and William F. Wood Jr., Research Models and Facilities Division.

The individual awards were for team effort involving the application and combining of techniques in the engineering, design, metal casting and plastic sizing for dimensional control of aircraft models which has provided a method of production of a large number of different configurations at savings estimated at $179,355.

In making the presentations, Dr. Thompson stated, "Cost reduction is a program which has been practiced at Langley throughout its history. This is not a new concept in our operating philosophy. There is, however, a requirement imposed in NASA's Cost Reduction Program which is new to us - that is reporting our good management practices which result in cost savings. Good management techniques which we employ and describe, document the Center's cost reduction practices and thereby create our reports on cost reduction."

WANTED: Two men to share 3-bedroom apartment in Lakeshore starting Sept. 1. Pearson, 838-2536.

WANTED: Driving combination from Norfolk to W.A. on 7:30 shift. Zefpfel, 3202.

WANTED: Sailfish. Shea, PA 2-8449 after 5 p.m.

WANTED: Alternate drivers from Green Oaks, Oak Park, or Ivy Farms to W.A. on 8 shift. Griffin, 4534.

THIRTY-TWO STAFF MEMBERS EARN ADVANCED DEGREES

Melvin S. Anderson
Structures Research
Ph.D., Eng. Mechanics
V.P.I.

Laurence N. Conner, Jr.
Aero-Physics
Ph.D., Aerospace Eng.
N. C. State

Fred R. De Jarnette
Dynamic Loads
Ph.D., Aerospace Eng.
V.P.I.

Dennis O. Allison
Dynamic Loads
M.S., Physics
V.P.I.

Thomas T. Bales
Structures Research
M.S., Metals Eng.
V.P.I.

David N. Braski
Structures Research
M.S., Metals Eng.
V.P.I.

Patrick L. Corbin
Structures Research
M.S., Eng. Mechanics
V.P.I.

John G. Davis, Jr.
Structures Research
M.S., Mechanical Eng.
V.P.I.

Kenneth R. Garren
Space Mechanics
M.S., Mathematics
William and Mary

Walter L. Heard
Structures Research
M.S., Eng. Mechanics
V.P.I.

Frank Hohl
Aero-Physics
M.S., Physics
William and Mary

C. Michael Hudson
Structures Research
M.S., Eng. Mechanics
V.P.I.

Ruben L. Jones
Space Mechanics
M.S., Geodetic Science
Ohio State University

Lawrence E. Putnam
Full-Scale Research
M.S., Aerospace Eng.
University of Virginia

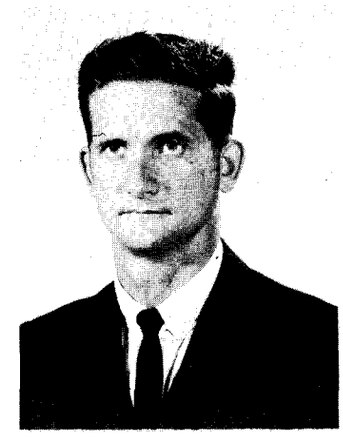
Henry G. Reichle, Jr.
Instrument Research
M.S., Instrumentation Eng.
University of Michigan

V. Thomas Rhyne
Analysis and Computation
M.S., Electrical Eng.
University of Virginia

William H. Mayes
Dynamic Loads
M.S., Engineering
University of Southampton

William M. Murray
Full-Scale Research
M.S., Mechanical Eng.
Rensselaer

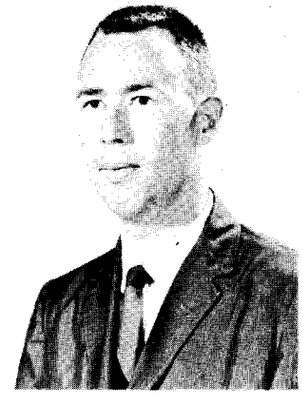
Luther Neal, Jr.
Aero-Physics
M.S., Aerospace Eng.
University of Virginia



John G. Shearin
AMPD
M.S., Aerospace Eng.
V.P.I.

Betty Sheffield
Analysis and Computation
M.A., Mathematics
U.C.L.A.

Calvin T. Swift
Aero-Physics
M.S., Eng. Mechanics
V.P.I.



Joseph E. Walz
Structures Research
M.S., Eng. Machanics
V.P.I.

John P. Weidner
Aero-Physics
M.S., Eng. Mechanics
V.P.I.

William R. Wells
Space Mechanics
M.S., Applied Math.
Harvard University

Charles H. Whitlock
AMPD
M.S., Aerospace Eng.
University of Virginia

R. Gale Wilson
Structures Research
M.A., Physics
William and Mary

Robert T. Wingate
FVSD
M.S., Applied Mechanics
University of Virginia

G. Burton Northam
Applied Materials and Physics Division
M.S., Mechanical Engineering
V.P.I.

Richard E. Snyder
Flight Vehicles and Systems Division
M.S., Engineering Mechanics
V.P.I.

Clarence P. Young
Flight Vehicles and Systems Division
M.S., Engineering Mechanics
V.P.I.

Shown above are members of the second group of high school graduates who have been appointed for summer employment at the Center under the President's Youth Opportunity Campaign. Members of the group are front row (from left): Joyce Burke, Lynne Dannelly, Carol Buckley, Anne Sherman, Delores Mathews, Jacquelyn Sayles, and Anne Tweedy. Second row - Edmund Clarke, John Carter, Jerry Wineberry, David Hargrove, Michael Riberio, Jack Karika, Frederick Moss, and James Costner. Back row - William Vaughan, Wesley Williams, Robert West, Clenton Price, Ernest Mitchell, Robert Alligood, Robert Mason, Milton Hathaway, and Robert Whetstine.

MEDICAL IDENTIFICATION CARDS

The American Medical Association's "Emergency Medical Identification Cards" and pamphlets describing the use of the symbol are available to Center employees at the East and West Dispensaries and the Employee Services Branch.

The American Medical Association designed this symbol to be a universal sign indicating the presence of information important to the life and health of the wearer. All who might perform first aid or emergency medical care will recognize it.

Everyone should carry an identification card. A card, such as the AMA emergency medical identification card, is useful to identify an ill or injured person, to help locate family, friends, and personal physician, and to give information that will improve emergency care.

People with special health problems should also wear a durable metal or plastic alerting signal device on their wrist, ankle, or neck, indicating their special need for medical care.

On the emergency medical identification card should be noted any special problems that need immediate attention in an emergency or could cause an emergency. For example, diabetics must be identified so that a person in diabetic coma will get proper treatment promptly and needed doses of insulin will not be overlooked during treatment for injury.

WANTED: To trade girl's 20-inch bicycle for girl's 24 or 26-inch bicycle. Youngblood, 245-3347.

WANTED: Fifth driver from Gloucester Pt. to W.A. on 8 shift. Hudgins, 4826.

WANTED: Man to share house trailer at Langley Circle. Duxbury, CH 5-3476.

SEVEN RECEIVE CASH AWARDS

Seven employees recently received cash awards for suggestions that might result in the granting of patents by the United States Government in connection with their inventions on the job.

Francis M. Rogallo, Full-Scale Research Division, won $200 for his "Control Devices for Flexible Wing Aircraft." He also shared a $200 award with William C. Sleeman, Full-Scale Research, for a "Control for Flexible Parawing."

Arthur W. Vogeley and Alfred J. Meintel, both of Space Mechanics Division, shared a $200 award for an "Optical Instrument."

James A. Mayo, Flight Vehicles and Systems Division, and James E. Michael, Electrical Systems Division, shared a $200 award for "Missile Stage Separation Indicator and Stage Initiator."

Dr. Kennedy F. Rubert, Aero-Physics Division, received $100 for "Quick-Release Connector."

EMPLOYEES DONATE BLOOD

The Bloodmobile made its first visit of the Fiscal Year to the Center on July 7 and employees donated a total of 168 pints of blood. The quota was 160 pints.

Robert Guillotte reached the six-gallon mark and Peter Boisseau completed his quota for four gallons. Three-gallon donors were Ellis M. Davis, A. J. Voitlein, Billie Short, and Richard A. Pride.

Reaching the two-gallon mark were U. T. Joyner, Emma J. Landrum, Bruce Flagge, Frances Rose, Harry Lishman, and Mary Fetner.

One-gallon pins were presented to Joe Purdue, James R. Flowers, Harold L. Crane, Roger Dean Bengtson, Harlan Holmes, Dwight McSmith, Ray Haynes, and Joseph Guy.

The Bloodmobile will make its next visit to the Center on September 22. Employees interested in registering to take part in this program may call East Dispensary, 2243.

Assisting during the visit were Dr. C. C. Tan and Dr. Franklin C. Wilson.

ARTHUR H. HAUSER DIES

Arthur H. Hauser, Experimental Facilities Mechanic, Mechanical Service Division, died June 30 after an illness of three months.

Hauser was born June 4, 1934 in Petersburg. He graduated from Dinwiddie High School and served in the U.S. Air Force from January 23, 1953 to January 33, 1957. He joined the civilian staff at Langley Air Force Base in 1957 and transferred to the Center on April 8, 1964.

Surviving are his wife, Mrs. Betty C. Hauser; a daughter, Kimberly Jean Hauser, and a son, Kevin H. Hauser.

WANTED: Ride from Beaconsdale Meadows to W.A. on 7:30 shift. Lambiotte, 4842.

WANTED: Ride or driving combination from Hiland Pk. to W.A. on 7:30 shift. Jalufka, 723-3925.

WANTED: Ride from Essex Park area to W.A. on 8 shift. Moss, 4891.

FOR SALE: Wurlitzer mahogany spinet piano - $445. Helen Wheary, PA 2-5189.

WANTED: Driving combination from Portsmouth or Churchland to W.A. on 8 shift. Farrior, 4770.

WANTED: Ride from Robinson Rd. area to W.A. on 8 shift. Jurscaga, 4881.

Seven employees recently received cash awards for suggestions that might result in the granting of patents. Top left photograph - Francis M. Rogallo (left) receives his award from Mark Nichols, Chief of Full-Scale Research Division. Top right photograph - William C. Sleeman also receives his award from Nichols. Center photographs - W. Hewitt Phillips, Chief of Space Mechanics Division, presents checks to Arthur W. Vogeley (left photograph) and Alfred J. Meintel (right photograph). Bottom left photograph - James W. Mayo (left) receives his award from Edwin C. Kilgore, Chief of Flight Vehicles and Systems Division. Bottom right photograph - Joseph Getsug (left), Chief of Electrical Systems Division, congratulates James E. Michael. Absent when the pictures were taken was Dr. Kennedy F. Rubert, Aero-Physics Division, who also received a certificate and cash award.

KNOW YOUR CREDIT UNION

Questions from members indicate a widespread interest in the Credit Union's insurance program as well as considerable confusion regarding it. A review of fundamentals seems to be in order - W. E. Beddoes receives the credit for suggesting it.

The coverage has nothing to do with guaranteeing the safety of shares. The failure rate of Credit Unions is so low and the recovery rate (in those that do) is so high, that the Federal Bureau of Credit Unions has never considered the expense of bank-type deposit insurance worthwhile. The Credit Union's insurance is on the life of the member of both loan and share benefits and on the health of the member for loan benefits only. Provided the member is insurable, as will be discussed later, coverage is automatic and involves no out-of-pocket cost.

Loan-life insurance is fairly straightforward. It pays off the entire loan balance, up to $10,000, if the borrower should die before the age of 70. Involved can be one loan or a combination of them. The borrower is defined as the maker of the note which supports the loan. Thus maker of the note becomes the operative term. Remember it. A man borrows money pledging shares in his wife's account of which he is co-owner; he signs the note as maker (top-line); his wife may or may not sign as co-maker; suppose she dies, what happens? Nothing. The husband is the insured.

Share-life insurance is almost as simple except that more thought is required on the part of the member. It is his responsibility to see that his shares are distributed among his accounts (including those of his immediate family) to the best advantage insurance-wise; to see that the number of accounts is appropriate (why have over $2000 in only one account when for 25 cents his wife/child can open another one and benefit from the additional coverage?); and, finally, to see that the insurance, is in fact, on the desired individual.

This last responsibility is also a matter of concern to the Credit Union. Prior to the implementation of the insurance program on October 1, 1962, no distinction was made between members and joint-owners. Both names appeared on the plastic account identification plate. Nothing could be done about that, so joint-owners were given a choice as to which one would be insured. The one selected would have his/her name printed first on the plate even if an old plate had to be destroyed and a new one issued. Now, however, the member is the one insured and the membership card so states. Only the member's name appears on the plastic plate although the membership cards, ledger cards, and statements reflect joint-ownership if appropriate. It is strongly recommended that all members now carrying plates with two names, check the top name. That individual is the one insured. Even better, come in and up-date both membership and insurance records; eliminate any possibility of confusion or of error.

Basically, share-life insurance matches the shares held by a member up to $2000 between the ages of 6 months and 55 provided the member is performing his normal duties at time of deposit (or if not, subsequently returns to duty). At the age of 55, coverage drops to a maximum of $1500 (75% of $2000); at 60, it drops to $1000; at 65 to $500; and on the last day before the members 70th birthday, it stops completely.

The health-type insurance mentioned earlier pays off the loan balance up to $10,000 if the borrower is totally and permanently disabled before the age of 60. The disability, either injury or sickness, must happen/commence after the loan is made and must continue for at least 3 months before a claim can be filed. No disability benefits are paid for any disability caused by war, declared or undeclared.

Ambassador Tran Thien Khiem, South Viet Nam, visited the Center last week. Shown with him are (from left): Du Kim Long, First Secretary, Economic Affairs, South Viet Nam; Colonel Nguyen Khuong, South Viet Nam Air Attache; Henry A. Fedziuk, Langley Research Center, Ambassador Tran Thien Khiem, Major General John N. Ewbank, Headquarters TAC; and Major General Gilbert L. Pritchard, Special Air Warfare Center, Elgin Air Force Base, Florida.

BISPLINGHOFF RESIGNS FROM NASA

Dr. Raymond L. Bisplinghoff, NASA's Associate Administrator for Advanced Research and Technology, submitted his resignation, effective at the end of August, to Administrator James E. Webb, to accept the Presidency of Case Institute of Technology, Cleveland, Ohio.

Dr. Bisplinghoff's successor has not been chosen.

Dr. Bisplinghoff will become Case Institute's fifth president, succeeding Dr. T. Keith Glennan, formerly Administrator of NASA. Dr. Glennan will become President of Associated Universities, Inc., New York.

Dr. Bisplinghoff came to NASA in August 1962 from the Massachusetts Institute of Technology where he was Deputy Head of the Department of Aeronautical Engineering.

In his role as an associate administrator at NASA, Dr. Bisplinghoff has been responsible for the planning, direction, execution and evaluation of all NASA technological programs conducted in advanced concepts, structures, components and systems that may have general application to the national objectives in aeronautics and space.

His responsibility included direction of five research centers primarily engaged in carrying out NASA programs in research and technology.

These included the X-15 research plane, studies for the supersonic transport, development of the lifting body as a reentry vehicle for manned space flight, vertical and short take-off and landing aircraft, and the joint NASA-AEC program for space nuclear propulsion.

FOR SALE: 1960 Dodge 2-door hardtop. King, CH 7-3817.
FOR SALE: Philco air conditioner, 10,000 btu, 220-volts - $75. Boyden, 596-1841.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 4, NUMBER 15 LANGLEY RESEARCH CENTER JULY 30, 1965

EIGHT TECHNICAL PAPERS PRESENTED BY EMPLOYEES AT AIAA MEETING

Eight technical papers by 18 Center authors and co-authors were presented at the largest meeting of aerospace scientists and engineers - the Annual Meeting of the American Institute of Aeronautics and Astronautics which was held in San Francisco July 26-29.

The Second AIAA Annual Meeting and Technical Demonstration provided some 5,000 attendees with full-scale, detailed reports on aerospace advances and an opportunity to discuss future trends in the field. Over 250 technical papers were delivered in 44 sessions covering aviation, space, and underwater technology.

Two Langley papers were presented at the session on Plasma Propulsion I - "Diagnostic Studies in a Hall Accelerator at Low Exhaust Pressure" by Philip Brockman, Robert V. Hess, Frederick W. Bowen, and Olin Jarrett, all of Aero-Physics Division, and "Experiments with a Hollow Cathode Hall Accelerator" by Richard H. Weinstein and James M. Hoell, Aero-Physics Division.

"Application of the Pitch Modulation Maneuver in the Region of the 'Limiting' Entry Velocity" by E. Brian Prit-

(Continued on page 8)

OPERATION CLEAN UP

OPERATION CLEAN UP, emphasizing records management, is in progress at Langley Research Center and will continue through the month of October.

"A preliminary survey, covering activity of the first two weeks of the operation, indicates that supervisors have responded to the request of Dr. Floyd L. Thompson, Center Director, for an action program," said Edward T. Maher, Center Records Management Officer, this week.

In announcing OPERATION CLEAN UP earlier this month, Dr. Thompson emphasized that records management is just a part of good business management. He called upon all supervisors to take steps necessary to insure that the contents of filing equipment in all organizational elements are screened. After screening, Dr. Thompson recommended that appropriate action be taken to dispose of useless material and arrangements be made for the transfer of semi-active file material from expensive office space to the Center's staging area or to a GSA Federal Records Center. Administrative Services Division was assigned the responsibility of assisting supervisors in culling records, boxing them for transfer, or affecting disposition.

Maher emphasized that what has been accomplished during the first two weeks is merely a good beginning. He again offered assistance to supervisors in accomplishing work related to OPERATION CLEAN UP, and reminded the Records Liaison Officers of each division and program office that their first progress report on OPERATION CLEAN UP is due by Wednesday, August 4, for inclusion in a consolidated report to NASA Headquarters. Forms have been furnished the Records Liaison Officers for that purpose.

SUPERSONIC TRANSPORT LANDING APPROACH EXPERIMENTS PLANNED

A familiar airplane wearing an unfamiliar "needle nose" extension has arrived at the Langley Research Center for a four-month program of in-flight research on the landing approach characteristics of supersonic transports of the future.

The plane is the same Boeing 707 used by NASA scientists during the summer of 1964 for very low speed landing and approach experiments.

Under a Langley Research Center contract, it has now been fitted by the Boeing Company with extensive instrumentation, including an analogue computer, to make it an in-flight dynamic simulator. The 707 is now able to duplicate most of the flying qualities expected to be typical of the much larger supersonic transport configurations under study in the United States.

As an essential part of the instrumentation needed to make the 707 into a flying simulator, a 15-foot needle-like nose extension has been added to the airplane. It contains a response sensing system to detect and report airplane motions which occur when the pilot moves a control or alters engine thrust.

Langley and several other NASA research centers have been engaged for more than five years in an intensive research program on the supersonic transport under the general sponsorship of NASA's Office of Advanced Research and Technology. The 707 landing approach research will build upon the foundation of technology already accumulated to explore in flight those supersonic transport characteristics which can be accurately simulated.

Under the national supersonic transport program, two

(Continued on page 8)

Shown on the flight line near the NASA Hangar is the Boeing 707 with its modified "needle nose" extension. The aircraft will be used by the Langley Research Center for a four-month program of in-flight research on the landing approach characteristics of supersonic transports of the future.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, Building 587, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

BABY DERBY. . .Announcing the adoption of a daughter, Patricia Diane, on July 10 is Arthur L. Newcomb Jr., Electrical Systems Division. . .Pat Brady, Fiscal Division, recently became the father of a six pound, ten ounce son, Michael Patrick. . .Celebrating the birth of a daughter, Bonnie Elizabeth, on July 22 is William Phaup, 8-foot.

DUCKPIN NOTICE. . .Anyone interested in bowling in the NASA Mixed Duckpin League on Monday nights should contact Curtis Shively, 4671. Bowling will start the first Monday night after Labor Day.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, August 3 at 7 p.m. at the Central Labor Union Hall, Newport News.

REPRESENTATIVE TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on August 9 from 3 p.m. until 4 p.m. Employees having problems or questions concerning their plan may call Lois Harris, 2523, for an appointment.

IRD GOLF LEAGUE. . .IRD's 9-Hole Golf League is past the midpoint in competitive play. More than 50 (two-man teams) have been actively participating and interest in the league has remained high. Low scratch scores have been posted by Bill Haywood with a 36 and Herb Thornton with a 40. Present plans include a post season medal tournament and a social event. The four highest team positions are as follows: Jim Stitt and Bill Moore - 15 points, Bill Rouse and Dave Rhodes - 15 points, Ray Haynes and C. L. Breckinridge - 15 points, and Herb Thornton and Jim Russell - 13-1/2 points. In the singles matches Ray Haynes leads with a 5-0 record, followed by Herb Boulter, Bill Jones and Jim Stitt tied at 4 each.

SOFTBALL LEAGUE. . .ACD leads the NASA Softball League with 7 wins and 2 losses and Packers are in second with 6 wins and 3 losses. Other team standings are as follows: Red Knights 7-4, IRD 6-4, Maulers 7-6, Ball Busters 4-6, Hasbeens 5-8, and Finks 2-6.

APPRENTICES BEAT MECHANICS. . .In a softball game played last week the apprentices of Electrical Section defeated the mechanics of Electrical Section by a score of 6 to 4. Addison Inge was the winning pitcher. Serving on the mound for the losers were Clyde Cottrill and Calvin Berry.

The Star-Spangled Savings Plan For All Americans

U.S. SAVINGS BONDS

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of August 2:

Monday - Beef broth with barley, beef stroganoff on buttered noodles, grilled pork chops, fried chicken livers, cheeseburger.

Tuesday - Green split pea soup, baked Virginia ham, chuckwagon steak, Polish sausage, western omelette.

Wednesday - Vegetable-beef soup, grilled steak, roast pork, fried chicken, hot dog.

Thursday - Consomme julienne, Spanish pot roast, chicken pot pie, liver and onions, fish cakes and coleslaw.

Friday - Clam chowder, roast beef, stuffed shrimp, broiled fish, barbequed sandwich.

The menu for the week of August 8 is as follows:

Monday - Cream of tomato soup, fried clams, corned beef brisket, stuffed pepper, baked hash.

Tuesday - Tomato-barley soup, sliced turkey with dressing, breaded veal steak, meat loaf, cheese ravioli.

Wednesday - Puree of bean soup, country style chopped steak, baked ham, fried fish sticks, Irish omelette.

Thursday - Vegetable-beef soup, grilled steak, baked Canadian bacon, fried chicken, chili con carne.

Friday - Clam chowder, hot roast beef sandwich, deep fried shrimp, broiled fish, macaroni and wieners.

WANTED: Large travel trunk. Kiethley, CH 4-5251.

WANTED: Two alternate drivers from LaSalle Ave. area to E.A. on 8 shift. Speight, 2559.

WANTED: Driving combination from Williamsburg to W.A. on 7:30 shift. Kane, 4851.

FOR SALE: Two Community Concert white series tickets - $16. Berne, 723-7916.

WANTED: Ride from Edgehill to E.A. on 8 shift. Pereira, 2507.

WANTED: Driving combination from 58th St. and Warwick Blvd. to W.A. on 7 shift. Soloman, 3373.

WANTED: Driving combination from Norfolk to W.A. on 8 shift. Kennedy, 4481.

FOR SALE: 1963 Volkswagon Karmann Ghia. Kyle, PA22405.

FOR RENT: 6-room furnished brick rancher with 1-1/2 bath and carport - near Hidenwood. Available Sept. 4 to June 1966. Moore, LY 5-1895 after 5:30 p.m.

FOR SALE: Drafting equipment and slide rule suitable for engineering freshman. R. M. Jones, 596-7396.

Four employees recently received cash awards for suggestions that might result in the granting of patents. Top left photograph - I. E. Garrick (left), Chief of Dynamic Loads Division, presents a certificate and check for $300 to Upshur T. Joyner for his suggestion of "Steering System." Top right photograph - William B. Mayo (left), Chief of Mechanical Service Division, presents a check for $800 to Wilbur C. Heier for his suggestion entitled "Method and Apparatus for Molding Compounds." In the two bottom photographs Edwin C. Kilgore, Chief of Flight Vehicles and Systems Division, presents a joint award for $200 to Joseph D. Pride Jr. (left photo) and William E. Zorumski (right photo) for their suggestion entitled "Remote Control Tubular Disconnect."

PROFESSOR TO VISIT CENTER

Professor Dan H. Pletta, Head of the Department of Engineering Mechanics, Virginia Polytechnic Institute, will visit the Center on August 2.

Employees wishing an appointment with Dr. Pletta may call the Training Office, telephone 2611.

RETIRED EMPLOYEE DIES

Harold Q. Westcott, retired employee and former Superintendent of Aeronautical Laboratory Mechanics at the old Stability Tunnel, died Tuesday.

Westcott was born May 16, 1897 in Syracuse, New York. He attended Rugby Preparatory School in Syracuse and served in the U.S. Army from August 30, 1918 to July 2, 1919. Before joining the Center staff he worked at the Newport News Shipbuilding and Dry Dock Company. He joined NASA on July 16, 1926 and retired in 1957 after 31 years of service.

He survivors include a daughter, Alice W. Thomas, formerly of Procurement Division.

FOR SALE: 1962 Renault Dauphine, $700. Clemmons, 829-2565 after 6 p.m.

FOR SALE: 1965 Plymouth Fury III convertible. Davis, PA 3-7864 after 5 p.m.

FOR SALE: Large swing set with tetter-totter and slide. Priddy, PA 3-5148.

FOR SALE: 3-bedroom rancher with 1-1/2 baths, and attached garage. White, 877-1247.

FOR SALE: 1955 Ford 2-door sedan - $175, Silvertone electric guitar with dual pick-up - $50. Fiorella, CH 56833.

FOR SALE: 1964 Rambler American, 4-door. Flanders, LY 6-0453.

SPACE INVENTION HINTS FLICK-OF-EYE STEERING

An astronaut in space finds his arms pinned to his side by the g-forces in his speeding spacecraft. He is unable to lift a hand to trip an important switch at a critical moment. He flicks his eyes to the left. On the instrument board in front of him, the vital switch responds.

In this hypothetical situation, the astronaut activated a "sight switch." The switch is a space research invention that grew out of a need for something to enable a person who could not use his hands or feet - but who could use his eyes - to reliably switch and control a given function.

The sight switch, developed by Charles L. Nork of Spaco, Inc. while doing research for NASA, is a non-contact device which opens or closes an electrical circuit.

The head-mounted device, that can be attached to a headband or the earpiece on a pair of ordinary eyeglass frames, is a tiny cylinder containing an infrared light source, transistor amplifier, sensitivity control and infrared sensor. Tiny wires, similar to hearing-aid wires, lead from the rear of the cylinder to a belt-mounted or pocket battery pack and the control relay.

The device presently used for experimentation has a cylinder unit mounted on each earpiece of eyeglass frames. This permits the wearer to operate two switches, one by looking to the right and the other by looking to the left.

Several everyday uses for the switch have been suggested, according to Technology Utilization Office at Marshall Center. NASA's Technology Utilization Office is responsible for the documenting of space innovations and spreading the word of their development through non-space industry, professional and biomedical channels.

The firm that developed the sight switch is motorizing a wheelchair which, when equipped with the switches, will enable a patient to control it completely by eye motions - move forward or backward and turn in either direction.

Such a wheelchair would give a paraplegic a degree of independence he would never have otherwise.

A Technology Utilization spokesman said incapacitated persons could use sight switches to control a mechanical page turner, switch room lights on and off, adjust room temperature, change the volume and channel selections of radio and television, raise and lower his bed or signal a nurse.

The sight switch has possibilities of being used to operate industrial machines, control panels and even typewriter keyboards.

It may eventually find its way into milady's dressing room where she can use it to open drawers or closet doors and select attire. She might some day have her dresser mirror lighted by merely glancing at an infrared sensor.

The fact that the eyeball is a better reflector of infrared light than is the iris of the eye is the key to the concept. The light source is aligned 35 degrees from the horizontal center line of the eye, and the sensor is aligned at a 50-degree angle.

The light is reflected by the eyeball onto the sensor. The normal "off" condition is when the sensor is receiving energy reflected by the eye and the flesh around the eye in an area of about one square inch. Normal blinking of the eyelid does not operate the switch.

"Sight switch" mounted on eyeglass frame can be flicked by a mere movement of an eyeball. It was developed from research for NASA and is regarded as being useful in non-space applications. It grew out of a need for a device to enable a person who could not use his hands or feet - but who could use his eyes - to reliably switch and control a given function.

BOLLERUD NAMED TO NASA

NASA has announced the appointment of Col. Jack Bollerud, U.S. Air Force, Medical Corps, as Deputy Director of Space Medicine in the Office of Manned Space Flight, NASA Headquarters.

Colonel Bollerud has assumed his duties as deputy to Dr. W. Randolph Lovelace II, Director of Space Medicine. He will serve as personal representative and principal advisor to the director in the planning and execution of medical aspects of manned space flight developments and operations.

Colonel Bollerud was Chief of the Science Division, Directorate of Science and Technology, USAF, since October 1960. Previous assignments include that of Director of Life Sciences, Air Research and Development Command, Andrews AFB, Md., Chief of the Aeromedical Laboratory, Wright Air Development Center, Ohio, where he received the Legion of Merit for outstanding contributions to aviation medicine.

Bollerud was born May 27, 1914 in Everson, Washington. He attended the University of Washington and earned his B.S. and Doctor of Medicine degrees from the University of Oregon. He is a member of the Aerospace Medical Association, American Medical Association, and is a Fellow of the American Board of Preventive Medicine.

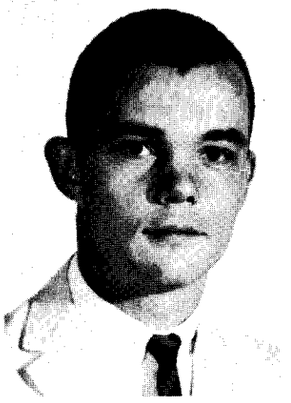
WANTED: Driving combination from Dare to E.A. on 8 shift. Mulqueen, 2681.

WANTED: Ride from Newmarket-Briarfield area to W.A. on 8 shift. Tanner, 4582, and Dannelly, 3214.

WANTED: Ride from Langley Circle to W.A. on 7:30 shift. Parker, 4815.

STUDENT TRAINEES RECEIVE BACHELOR DEGREES

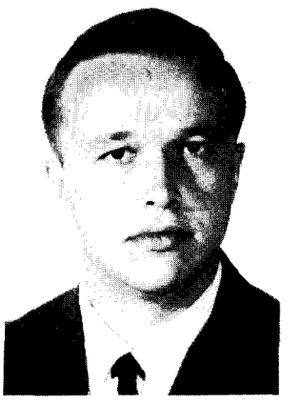
Richard A. Langhans
B.S., Mech. Eng.
Mississippi State



Bruce A. Conway
B.S., Aerospace Eng.
V.P.I.

James E. Gardner
B.S., Eng. Mechanics
V.P.I.

Carl A. Trexler
B.S., Mech. Eng.
V.P.I.

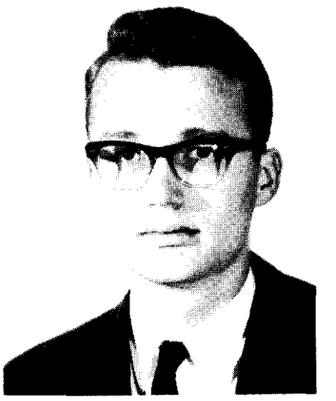


Robert E. Satterthwaite
B.S., Aerospace Eng.
V.P.I.

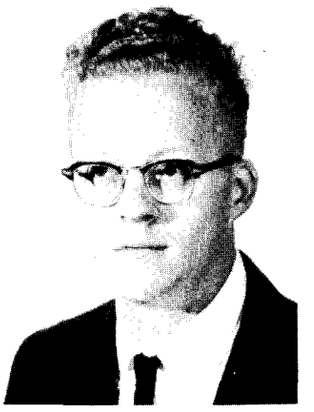
William M. Howle Jr.
B.S., Electrical Eng.
Georgia Tech.

Klaus P. Zaepfel
B.S., Electrical Eng.
V.P.I.

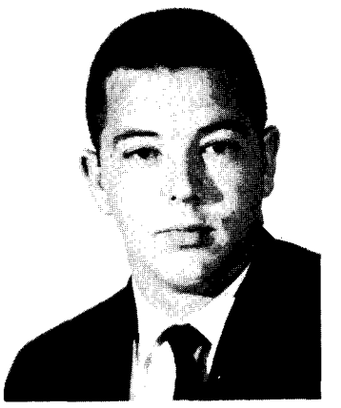
Lawrence P. Shomo
B.S., Physics
Drexel



James E. Cain
B.S., Electrical Eng.
Drexel



Charles H. Fox Jr.
B.S., Physics
Drexel



Michael A. Wilson
B.S., Electrical Eng.
Georgia Tech.

EXTENDED TELEPHONE SERVICE

Center employees are reminded that beginning August 15, it will no longer be necessary to go through the switchboard to place official telephone calls to points in Seaford, Yorktown, Lee Hall and Denbigh. After August 15, any telephone number in these areas can be reached by dialing "49" and the number as listed in the Peninsula Directory. Frequently called Government installations in these exchanges include Fort Eustis, Naval Weapons Station, and SREL.

The elimination of toll charges and tie lines to call the extended area exchanges is part of the rate adjustment and service improvements resulting from creating a metropolitan exchange for the Peninsula area, according to the Chesapeake and Potomac Telephone Company. The elimination of toll charges and special lines will result in significant savings to the Langley Research Center if the calls to the new extended area are official. Every effort should be made to insure that all telephone calls are essential to the conduct of business. Unnecessary personal calls tie up switching equipment and place delays in the path of business calls.

Of course, this latest improvement in service will affect all telephone subscribers so employees may take advantage of calls to the extended area from their home telephones.

FOR SALE: GE automatic washer - $35. Borchers, 596-5924.

FOR SALE: 1956 Ford 2-door sedan. Mangum, 596-0435.

AIAA HONORS VON BRAUN

Dr. Wernher von Braun, Director of the George C. Marshall Space Flight Center, has been named recipient of the 1965 AIAA Louis W. Hill Space Transportation Award. Dr. von Braun is one of the world's leading space scientists and the man in charge of developing the Saturn moon rocket.

The award is presented each year by the American Institute of Aeronautics and Astronautics for "significant contribution indicative of American enterprise and ingenuity in the art and science of space flight." Presentation was made July 29 during the AIAA Second Annual Meeting and Technical Demonstration in San Francisco.

The award carries the second largest honorarium in the aerospace field - $5,000 to an individual or up to $10,000 for a team contribution.

Dr. von Braun was cited for "his personal contributions, and leadership in the development of space launch vehicles of unprecedented power and reliability essential for space transportation of large payloads, including man."

When the 185-foot high Saturn I was launched on May 25 of this year from Cape Kennedy, it marked the ninth consecutive success, unprecedented for a rocket.

As Director of the Marshall Center, Dr. von Braun oversees research and development on large vehicles from conception of the idea through design, development, fabrication and assembly of hardware and testing.

The Saturn launch vehicles are being developed to carry out this country's goal of placing men on the moon and returning them safely by the end of this decade.

Dr. von Braun was born in Wirsitz, Germany, on March 23, 1912.

He was awarded a bachelor's degree at the age of 20 by the University of Berlin. Two years later, in 1934, he received his doctorate in Physics at the same institution.

In 1930 he joined a group of inventors who constituted the German Society for Space Travel. In 1932 he was employed by the Ordnance Department of the German government. From 1932 to 1937 he was chief of a small rocket development station near Berlin, where the liquid-fueled rockets identified as A-1, A-2, and A-3 were developed.

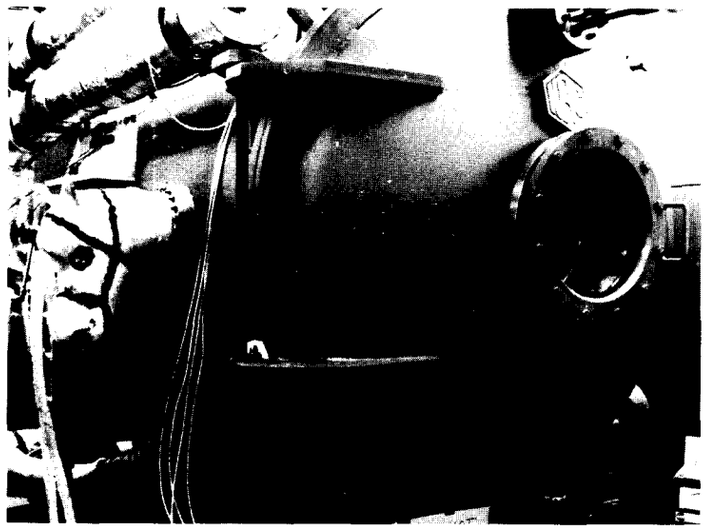
He became technical director of the Pennemunde Rocket Center in 1937 at the age of 25. The A-4, which attained a speed of Mach 5 and a range of 225 miles and later became known as the V-2, was developed there. In the closing months of World War II he led more than 100 of his fellow scientists to the West and surrendered to the Allies.

Dr. von Braun came to the U.S. in September 1945 under contract to the U.S. Army. He directed high altitude firings of captured V-2 rockets at White Sands Missile Range, New Mexico. In 1950 he was transferred to Huntsville where the Army centered its rocketry activity.

He received American citizenship in Huntsville on April 14, 1955.

At the Huntsville installation, Dr. von Braun directed the development of the 200-mile Redstone rocket, which was America's first large ballistic rocket. Later the von Braun group developed the Jupiter IRBM and initiated the development of the Pershing rocket. They were instrumental in launching the first U.S. satellite, Explorer I, in January 1958, and in providing modified Redstone rockets for the Mercury man-in-space program.

In July 1960 Dr. von Braun and his group were transferred to NASA and put in charge of developing and testing large launch vehicles for peaceful space exploration.



Technicians at Marshall Space Flight Center were somewhat startled recently when ice formed a horse's head just outside a test chamber containing the Pegasus satellite. Frost formed on the fitting because the line carried supercold liquid nitrogen into the environmental chamber. Technicians watched the frost slowly form the horse-head shape and then they added the bridle and eyes. Being tested inside the chamber were some meteroid detector panels from Pegasus - a satellite named for the mythical flying horse. Naturally, the technicians called their frosty horse "Pegasus."

HEARING A HEARTBEAT MILES UP

An instrument which will keep tabs on an astronaut's health hundreds or even thousands of miles in space is being developed by NASA.

The heartbeat, pulse, temperature and other medical facts about space-traveling astronauts are now monitored by sensors attached to their bodies with the information transmitted back to earth.

That works well on short, near-earth missions. But Dr. Albert J. Kelley, Deputy Director of NASA's Electronics Research Center, says things will be different on future astronaut missions.

He visualizes teams of scientist-astronauts spending months in outer space conducting exacting scientific investigations, including extra-vehicular research, Kelley said.

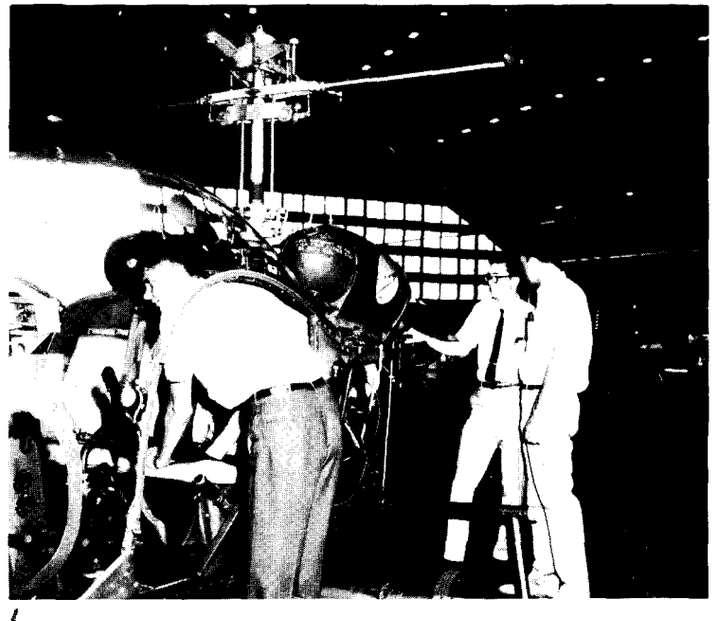
This means letting astronauts out of the spacecraft into the free environment of space. Under these circumstances, Kelley added, "it will be important to medically monitor them with devices which are totally remote rather than attached to their skin."

"Unattached and implanted sensors will allow complete freedom of movement and eliminate discomfort."

Kelley called the research project to develop the sensoring instrument "a major step in advanced electronics monitoring."

He said such a device "could be of inestimable benefit in a hospital's intensive care ward to maintain watch on the medical progress of many patients from a central source."

Work on development of the instrument is being done by North American Aviation's Space and Information Systems Division at Downey, California, under contract to the Electronics Research Center.



Approximately one hundred college students have joined the Center staff as summer employees. Last week the group attended an orientation program and visited a number of facilities. The above photographs show the students boarding busses for the tour. In the bottom right photo several students inspect exhibits in the NASA Hangar.

CABELL NAMED CONSULTANT

NASA announced that General Charles P. Cabell, United States Air Force (Ret.), was sworn in July 3 as a consultant by Administrator James E. Webb.

The former four-star officer will advise the NASA Administrator on organization and management development activities and provide other guidance based on his 40 years of government experience.

General Cabell was graduated from the United States Military Academy in 1925 and received his Air Corps wings in 1931.

Military assignments during his career include that of direction, Joint Staff, Joint Chiefs of Staff. His recent assignment was deputy director of the Central Intelligence Agency from 1953 to 1962.

He is currently engaged in other consulting activities and lives with his family in Arlington.

FOR SALE: 3-bedroom colonial house. Green, 877-2981.

FOR SALE: Girl's 26-inch Schwinn bicycle, fiberglas 14-foot runabout with 30 hp outboard motor and trailer. Spear, 596-2246.

FOR SALE: One share in Riverdale Recreation Association. Jones, 838 0765.

FOR SALE: 1963 Ferrari. Norwood, 229-2810.

FOR SALE: 1963 TR 4. Stroyan, LY 6-0465.

FOR SALE: Magnavox AM-FM 10-transistor radio - $35. Dearing, 5357-B Ronda Dr., Norfolk.

FOR SALE: 1964 Triumph TR 4. Rogallo, 838-2266.

FOR SALE OR RENT: 3-bedroom, 2-bath house in Hidenwood. Johnson, 596-7486.

FOR SALE: New portable GE mixer. McCraney, 826-6651.

FOR SALE: Blonde youth bedroom suite including twin beds with mattresses, dresser, mirror, chest of drawers, night stand, chest, and chair - $95. Cyrus, LY 6-0646.

SUPERSONIC TRANSPORT LANDING

(Continued from page 1)

airframe companies are intensively studying two primary aircraft designs, one featuring the variable sweep wing principle pioneered by Langley, and the other a fixed triangular wing concept.

Even though the 707 flying simulator is a fixed swept wing subsonic jet, it can be made to respond to a pilot as though he were actually flying a supersonic transport of the future. The changed responses are provided by the analogue computer system and other electronic equipment which make the 707 an accurate in-flight dynamic simulator.

For example, wind tunnel evaluations of various supersonic transport concepts have indicated that, partly due to their size, they will not respond as quickly as present jets to a pilot control input. In the 707 simulator, the computer will provide a time delay between a control action by the pilot and a response by the airplane carefully calculated to match the predicted responses of a supersonic transport.

The research program will assess simulated landing approaches with both the fixed wing and variable sweep concepts, including conditions such as emergency use of cruise sweepback during a landing.

For the experimental program, the 707 has been fitted with a separate control system for the NASA evaluation pilots who will conduct the experimental flights. The standard 707 control system has been left intact for the safety pilot who will occupy the left hand seat on all flights. The system will permit a wide selection of flight variables for research purposes without in any way compromising the safety of the crew or aircraft.

Most of the research flying will be done in the vicinity of Wallops Station where the former Chincoteague Naval Air Station provides a suitable location for repeated landing approaches free of traffic interference. The 707 will be housed and maintained at the Langley Center.

During the course of the research program, a team of 50 Boeing Company engineers, technicians and one company pilot will be based at Langley to maintain the airplane and assist in the research effort. Data measured during the research flying will be reduced by the Boeing Company and analyzed by Langley scientists and engineers.

The research project at Langley is a responsibility of the Flight Mechanics and Technology Division headed by Philip Donely. Project manager for the simulated supersonic transport flights will be Robert O. Schade. Two Langley research pilots, Lee H. Person Jr. and Jere B. Cobb, will fly the program.

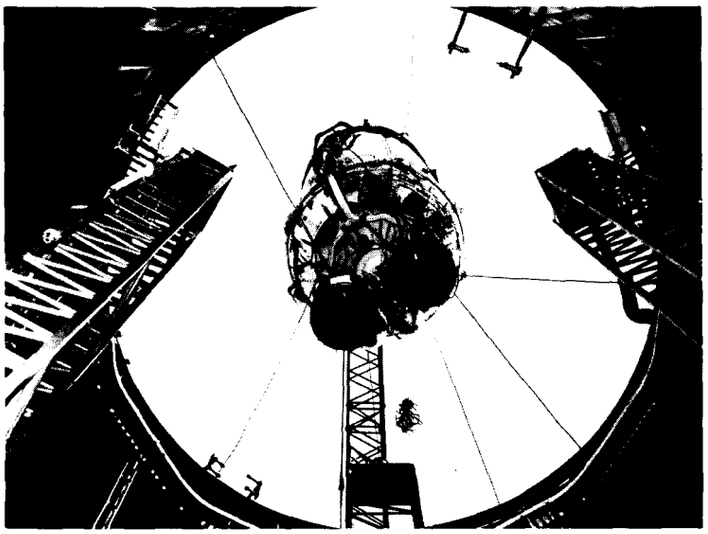
NASA TENPIN LEAGUE NOTICE

The NASA Tenpin League will hold an organizational meeting for the 1965-66 bowling season on August 4 at 7:30 p.m. in the Activities Building.

Team representatives are urged to arrive on time and to bring a complete list of names and addresses of team members for the league secretary.

Included on the agenda will be the following: adopt constitution for 1965-66 season, approve trophy list, approve banquet location, approve tournament schedule, approve increased bowling costs, adopt a budget, approve assignment of teams to divisions, determine order of play to eliminate position nights, discuss blind scores, discuss liberal substitution option, and discuss franchise fee.

Teams from last season's league must be represented at this meeting or forfeit their franchise rights. League play will start Tuesday, September 14 at 6:45 p.m. at the Hidenwood Fairlanes. New teams may apply by calling Durward Bolding, 838-1010, or Peggy Mayo, 596-9141. New teams will be accepted on a first come basis up to the maximum of 40 teams.



The business end of a Centaur rocket with its Pratt and Whitney engines is lowered into space vacuum chamber at the Lewis Research Center. The vehicle, scheduled to launch a Surveyor spacecraft to a soft landing on the moon, undergoes test under simulated space conditions.

EMPLOYEES PRESENT PAPERS

(Continued from page 1)

chard and Paul F. Holloway, Aero-Physics Division, was presented at the session on Atmospheric Flight Mechanics.

Two papers were presented at the session on Structures including "Static and Dynamic Effects of Eccentric Stiffening of Plates and Cylindrical Shells" by John A. McElman, Martin M. Mikulas, and Dr. Manuel Stein, all of Structures Research Division, and "Tension Shell Structures for Low-Density Entry Vehicle" by Lawrence D. Guy, Structures Research. R. R. Heldenfels, Chief of Structures Research, served as chairman for the session.

"Recent Fluid Dynamic Studies at M-41 in Helium" by Arthur Henderson, Ralph D. Watson, and Richard D. Wagner, Aero-Physics, was presented at the session on Fluid Dynamics.

"Analysis of a Simple Technique for Establishing Lunar Orbits" by L. Keith Barker and Gene W. Sparrow, Space Mechanics Division, was presented at the session on Guidance and Control II.

At the session on Flight testing, Charles H. Whitlock, Applied Materials and Physics Division, delivered a paper on "A Data Reduction Technique for Determining Re-Entry Motions Using Body-Fixed Rate Gyro-Accelerometer Data."

WANTED: Driving combination from Glendale to W.A. on 8 shift. Gainer, 4540.

WANTED: Passengers from Norfolk to W.A. on 8 shift. Sandra Bowles, 3334.

WANTED: Alternate drivers from Whealton Rd. to W.A. on 8 shift. Ashe, 4753, or Williams, 4432.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 4, NUMBER 16 LANGLEY RESEARCH CENTER AUGUST 13, 1965

FOUR MAJOR ORGANIZATIONAL CHANGES ANNOUNCED BY NASA

NASA has announced four organizational changes.

Willis H. Shapley, a career civil servant, will become Associate Deputy Administrator effective September 1. He will transfer from the Bureau of the Budget where he has been Deputy Chief of the Military Division.

Dr. Harry J. Goett, Director of Goddard Space Flight Center, will become Special Assistant to Administrator James E. Webb effective immediately.

Dr. John F. Clark, Associate Director of sciences in the Office of Space Science and Applications, will become Acting Director, Goddard Space Flight Center.

Dr. John W. Townsend, Assistant Director of Goddard's Office of Space Science and Satellite Applications, will become Deputy Director at Goddard. The position of Deputy Director is a new post at the center. Eugene W. Wasielewski will continue as Associate Director.

Shapley will replace Dr. George L. Simpson Jr. who recently resigned to become Chancellor of University System of Georgia. He will be responsible to NASA's general management for the development and coordination of staff work for the processes by which major matters for decision or policy determinations are presented to management and acted on.

The present Policy Planning Board will be discontinued when Shapley's appointment becomes effective. The staff of the Office of Policy Planning will assist him in carrying out the preparation and scheduling of policy matters which go to the Administrator, Deputy Administrator and Associate Administrator.

Goett, who plans to retire from civil service next July, will assist the Administrator in carrying out a number of scientific responsibilities and functions both within NASA and with other agencies. He will represent the Administrator in discussions on scientific personnel before the Federal Council on Science and Technology.

Shapley was born in 1917 in Pasadena, California. He attended Harvard College and the University of Chicago and received his A.B. degree from Chicago in 1938. From 1938 to 1942 he did graduate study and research in political science and related fields at the University of Chicago.

In 1942 he joined the Bureau of the Budget where he has been employed since that time. His assignments have dealt with defense programs, especially military research and development, and with aeronautics and space programs. These assignments have kept him in close touch with the national space program.

At the present, in addition to duties as a Deputy Chief of the Military Division, he has been serving as special assistant to the Director for space program coordination.

Shapley received a Rockefeller Public Service Award in 1956, and the Bureau of the Budget Director's Exceptional Service Award in 1963. He is a member of Phi Beta Kappa

(Continued on page 3)

HARRIS APPOINTED HEAD OF UNITED FUND CAMPAIGN

Thomas A. Harris

Thomas A. Harris, Research Assistant in the Office of the Director, has been appointed chairman of the Center's twelfth annual United Fund Drive scheduled for September, it was announced this week by Dr. Floyd L. Thompson, Director.

Assisting Harris in the campaign will be William B. Mayo, Chief of Mechanical Service, who will be vice-chairman, and Robert W. Boswinkle, Technical Assistant, Office of Assistant Director, who will be chairman of advanced solicitations.

Harris stated that an intensive one-day campaign of all staff members will be held during the latter part of September. The general solicitation will be preceded by advanced solicitation of key personnel.

During the drive held last year staff members, contractors and representatives of local companies assigned to the Center donated or pledged a record total of $64,285.38 to organizations benefitting under the solicitation program.

(Continued on page 3)

NASA ACCEPTS LIFE SUPPORT SYSTEM FOR LANGLEY RESEARCH

An experimental life support system, enclosed in a simulated space cabin, intended for laboratory research has been accepted by NASA and was due to arrive at the Langley Research Center yesterday.

The fully operating prototype system, designed and constructed by the Convair Division of General Dynamics Corporation, San Diego, California, completed its final operating demonstration in July, culminating two years of design, development and construction effort.

NASA research on the technology of advanced life support systems is a program of the NASA Headquarters Directorate of Biotechnology and Human Research of the Office of Advanced Research and Technology.

The system is contained in a steel pressure shell 18 feet in diameter and 18 feet high. Total weight is about 30 tons. The shell holds all the equipment necessary to supply a completely inhabitable environment for a crew of four experimenters for one year, with a 90-day re-supply of food and expendable items.

Although it was never intended for use in space, all of

(Continued on page 3)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, Building 587, telephone 2575

Editor.....Ruth Angel Verell
Staff Photographer..... Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

TOUCH FOOTBALL. . .The first games in the NASA Touch Football League will be held on Saturday, September 11 at 9:30 a.m. on the four fields used last year at Kecoughtan High School. Teams wishing to enter the league are requested to call Jack Cooper or Kam Kersey, telephone 4840 or 4457, as soon as possible.

REPRESENTATIVE TO VISIT HERE. . .Beverly Beale, Government-wide Service Plan representative, will be here on August 18 from 2 p.m. until 3 p.m. Employees having problems or questions concerning the plan may call Lois Harris, 2523, for an appointment.

BLOODMOBILE. . .The Red Cross Bloodmobile will visit the Center on August 25. Additional donors are needed to help meet the Center's quota. Those who have not registered to donate blood and wish to do so may call East Dispensary, telephone 2243.

NEW HEIRESS. . .Announcing the birth of a seven pound, fourteen ounce daughter, Lauri Catherine, on July 30 is William L. Poole, Instrument Research Division.

TENPIN LEAGUE. . .The NASA Tenpin Bowling League held an organizational meeting on August 4 and plans were made for the season to start on Tuesday, September 14 at 6:45 p.m. at the Hidenwood Fairlanes. A fee of two dollars per person will be charged. Three leagues will be formed including one scratch league and two handicap leagues with teams placed in the leagues according to last year's average. Vacancies are open for four new teams. Groups interested may call Durward Bolding, 838-1010, or Peggy Mayo, 595-9141.

LECTURE SERIES PLANNED

Dr. John Hudson, Assistant Professor of Materials Engineering, Rensselaer Polytechnic Institute, will conduct a series of lectures at 8 a.m. in the IRD conference room. The dates and subjects are as follows:

Aug. 16 - "Crystal Nucleation and Growth in Vacuum Systems"

Aug. 17 - "Clean Surfaces - Production, Measurement, and Properties"

Aug. 23 - "Electronic Phenomena in Vacuum Systems"

Aug. 24 - "Modern Methods of Vacuum Pumping"

Aug. 30 - "Total Pressure Measurement in Vacuum"

Aug. 31 - "Partial Pressure Measurement in Vacuum"

For additional information, call George Wood, 3234.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of August 16:

Monday - French onion soup, Spanish pot roast, grilled pork chops, stuffed flounder, Austrian ravioli.

Tuesday - Cream of tomato soup, fried oysters, barbecued spareribs, Salisbury steak, franks and beans.

Wednesday - Green split pea soup, baked Smithfield ham, chicken and dumplings, shrimp gumbo, cheese omelette.

Thursday - Vegetable-beef soup, grilled steak, smoked pork sausage, barbecued chicken, fish cakes.

Friday - Clam chowder, roast beef, fried fillet of flounder, broiled halibut steak, cheeseburger.

The menu for the week of August 23 is as follows:

Monday - Chicken-vegetable soup, Swiss steak, chicken shortcake, broiled ham slice, hot dog.

Tuesday - Beef broth, hot roast beef sandwich, spaghetti with meat sauce, liver and onions, baked hash.

Wednesday - Puree of bean soup, country style chopped steak, barbecued pork chunks over noodles, fried chicken, macaroni and wieners.

Thursday - Vegetable-beef soup, grilled steak, chicken pot pie, pork chop suey over rice or noodles, beef ravioli.

Friday - Clam chowder, roast ribs of beef, crab cakes, broiled fish, chili con carne.

FOR SALE: 3-bedroom brick rancher in Brentwood, wall-to-wall carpet, fenced backyard. Assume 5-1/4% loan with monthly payments of $101. Bohon, LY 6-7937.

LIFE SUPPORT SYSTEM ACCEPTED

(Continued from page 1)

its mechanisms and instruments are designed to function in the weightless environment of space as well as under Earth gravity conditions.

NASA scientists and engineers plan to use the complex device as a laboratory tool in a program of systematic research to enlarge the present scope of life support technology. Before extended space missions with multiple crews are attempted, numerous advances in life support techniques must be achieved, and the design and construction of the system itself contributed importantly to that end.

Within the device are numerous subsystems to:

1. Extract oxygen from the carbon dioxide exhaled by the occupants so that it can be breathed repeatedly.
2. Convert waste liquids and humidity condensates to drinking water entirely safe for human use.
3. Provide control of internal temperature and humidity.
4. Allow storage and handling of a freeze-dried food supply for four test subjects for 90 days at a time.
5. Remove from the cabin atmosphere all contaminating vapors which may be generated during operation of the device.
6. Provide personal hygiene facilities for the occupants.

The NASA life support system contract was monitored throughout by personnel of the Langley Research Center, and a five-man team of Langley scientists and engineers witnessed the manufacturer's final operating demonatrations in San Diego and accepted the system for NASA.

The system was placed aboard the S.S. Magnolia State and left San Diego on July 30 for the East Coast of the United States via the Panama Canal.

ORGANIZATIONAL CHANGES

(Continued from page 1)

and the author of papers relating to research and development and space programs.

Goett was appointed Director of the Goddard Space Flight Center in September 1959, after a 25-year career in the field of aeronautical engineering and astronomical research. During his tenure as center Director, some 36 Goddard satellite projects carrying over 100 scientific experiments were successfully placed into orbit. These project also included NASA's first international satellites.

Clark will serve as Acting Director at Goddard until a successor to Goett is named. In his capacity as Associate Director and Chief Scientist for the Office of Space Science and Applications, Clark conducted that office's space sciences planning program.

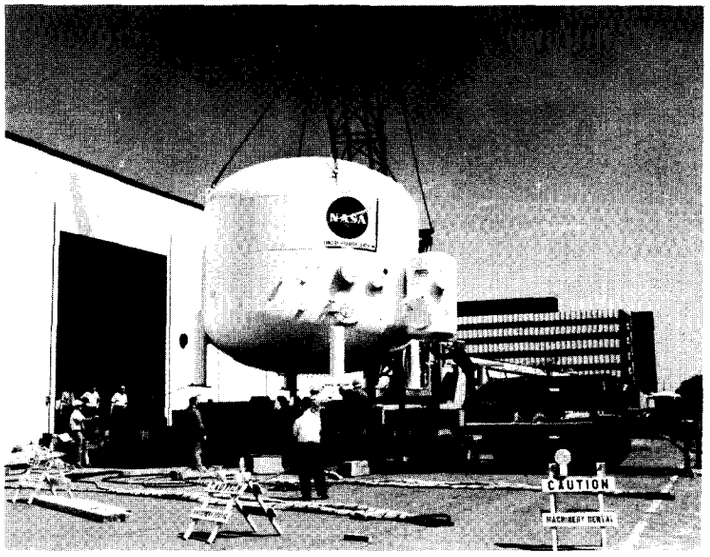
Townsend, a native of Washington, D.C., transferred to NASA from the Naval Research Laboratory in October 1958 and in April 1959 was appointed Assistant Director at Goddard.

WANTED: Driving combination from Windsor Great Park to E.A. on 8 shift. Jones, 2203.

WANTED: Driving combination from Hallwood to E.A. on 8 shift. Simonton, 2513.

WANTED: Driving combination from Bethel Park to W.A. on 7:30 shift. Spruill, 3207.

FOR SALE: 1961 Willis Jeep, 2-wheel drive. Morris, LY-67752.



An experimental life support system, which was due to arrive at Langley yesterday, is shown being loaded onto a trailer in San Diego, California. The system was transferred aboard the S.S. Magnolia State and left San Diego on July 30 for the East Coast via the Panama Canal.

UNITED FUND CAMPAIGN

(Continued from page 1)

This figure represented a total of $62,817.88 from 4026 Center employees for 95.4 percent participation and an average contribution of $15.60. Contract employees donated $1,467.50.

Harris is a native of Whites, Virginia. He received his B.S. degree in Physics from the College of William and Mary in August 1929.

Harris joined the Langley staff in September 1927 - two years before receiving his B.S. degree - as an assistant scientific aide. In August 1939 he was appointed Head of the Atmospheric Wind Tunnel Section. He served as Assistant Chief of the Stability Research Division from 1943 to 1947, and as Chief of that Division from 1947 to 1959. He was appointed to his present position in September 1959.

He is widely known as an expert on factors relating to stability and control of aircraft and frequently consults with industry in these areas. He was one of the early participants in the formulation of the transonic research program at Langley. He serves as the focal point for the varied inter-agency and intra-agency cooperative research projects conducted at Langley including research in support of the lunar mission and flights beyond the moon.

FINAL REPORT ON CAMPAIGN

A. Bruce Amole, who served as chairman of the Center's joint fund raising campaign for the National Health Agencies and the Federal Service Joint Crusades, announced that a final report showed that staff members contributed a total of $1792.25 to the joint crusades as compared to $1442.50 last year and a total of $4,516.71 to the health agencies as compared with $3,261.89 last year.

Amole expressed his appreciation to all staff members who took an active part in the Center's campaign.

FOR SALE: J. C. Higgins umbrella-type tent, size 10 x 12 feet - $45. Culotta, 723-6142.

KNOW YOUR CREDIT UNION

FLASH! After considerable investigation and careful evaluation of the pros and cons, the Board of Directors has decided to make FHA Title I Property Improvement Loans available to credit union members. This means that loans up to $3500 can now be made for a period of 5 years to finance alterations, repairs, and improvements to an existing structure.

Eligible are such things as the construction of an attached garage, installation of a heating system, landscaping, construction of private sidewalks, fences, driveways, addition of a bathroom, installation of built-in or permanently attached kitchen equipment, new wiring, etc. Interest charges are a low .75 of 1% (3/4%) on the unpaid balance each month for the first $2500 (or any part thereof) and .70 of 1% for any amount in excess of that figure up to the $3500 maximum. To qualify a member must own the property to be improved, be purchasing it under a contract, or hold it under a lease expiring not less than 6 months after the maturity date of the loan. Except in unusual circumstances, liens and/or co-signers are not involved.

As loans are made and reserves with FHA build up, 90% of the outstanding loan balance will eventually be covered in case of default by FHA insurance. This in no way affects the loan-life insurance now in effect, but it does give FHA the right to insist on certain requirements. These include credit checks, as appropriate, by the Credit Union's Credit Committee, the submission of bids or lists of materials with the loan application, progress and completion checks as considered necessary by the Credit Committee, and the authority to prosecute in cases of fraud or significant misstatement of facts in connection with the loan application.

So, step up and take advantage of this new service, With winter coming on, now is the time to get started on a planned program taking weather, available work force, rising costs, etc. into consideration. Call NASA 4607 or AF 2604 for information or pick up an application at the Gate House, NASA West Gate (Gate 4). Remember, it is possible to have more than one Title I loan at one time. The limiting factor is the total balance outstanding may not exceed the $3500 noted earlier.

COLLEGE OFFERS NEW DEGREE

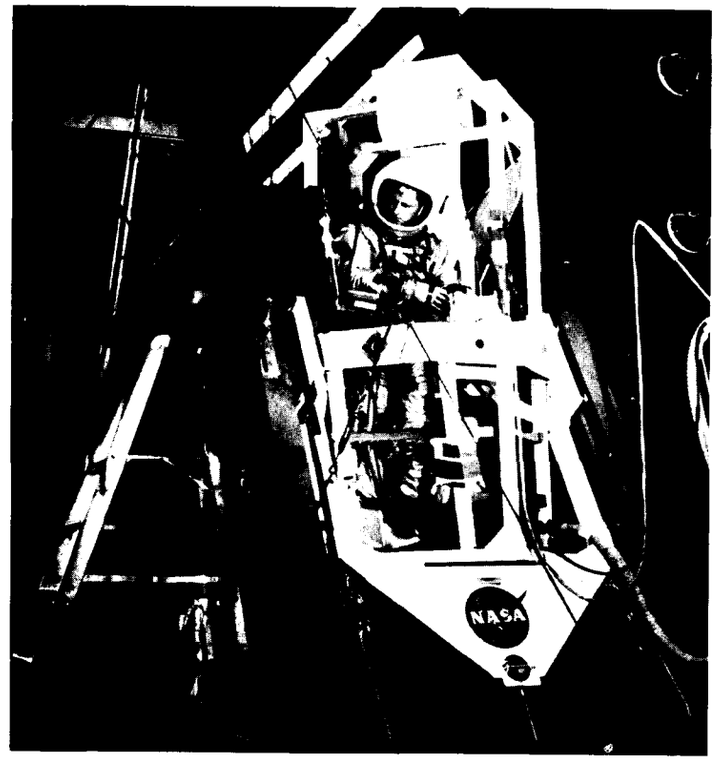
The Virginia State Council of Higher Education has authorized Old Dominion College to offer the degree of Master of Science in Physics, commencing in September. The Physics Department will offer a limited number of graduate courses during the 1965-66 academic year. In order to provide the opportunity for maximum student participation, these classes will meet during the late afternoon and evening hours.

It is anticipated that the following courses will be offered during the first semester: Physics 500 - Mathematical Methods of Physics, and Physics 406 - Introduction to Quantum Mechanics.

Employees interested in enrolling in these classes are requested to call the Training Office, telephone 2611.

FOR SALE: Weimeraner puppy. Winebarger, Williamsburg 229-4696.

FOR SALE: 16-foot Bladen plywood boat, portable canopy, 40 hp Johnson motor, Fleet Cap'n trailer, accessories. Forrest, 868-9881 after 5 p.m.



Astronaut Charles Conrad is shown in the drop-test rig being used to devise the best "safety belt" system for the Lunar Excursion Module as it descends to the moon's surface. Conrad is scheduled to make the next Gemini flight with Astronaut Gordon Cooper.

LUNAR-DESCENT SAFETY STUDIED

A strange-looking device with a pile-driver action is hammering out the best way to provide Apollo astronauts with "safety belts" as they bring their Lunar Excursion Module down to surface of the moon.

The safety restraints are being worked out by the Grumman Aircraft Engineering Corporation, which is building the LEM descent vehicle for NASA.

The astronauts, who will stand in the LEM all during the descent, will be tethered by waist straps similar to those used by window washers. But they want no more confinement than is necessary and that's where the strange-looking vertical drop-testing rig comes.

In it, pressure-suited subjects are knocked about with the kind of buffeting that could result if the LEM runs into any difficulties as it touches down on the surface. That is how researchers learn how much safety restraint is necessary.

These jolts are simulated in straight vertical drops in the testing rig. A dummy is used in the checkouts. The whole outfit is heavily instrumented with delicate sensors attached to the rig's frame and other instruments planted strategically inside the pressure suit.

The astronauts themselves are closely involved in the design of the safety-strap system that will help them descend to the face of the moon.

FOR SALE: 16-foot Larson runabout, 75 hp Johnson motor, trailer - $1200. Burcher, CH 5-2695 after 5 p.m.

FOR SALE: Hot Point refrigerator - $30. Byers, 596-8973.

FOR SALE: Beagle pups - $25. Richardson, 868-5551.

NASA NIGHT AUGUST 20

Officials of the Peninsula Grays baseball team have made plans to sponsor another NASA Night at the Peninsula Memorial Stadium on August 20. The game will be between the Grays and Greensboro with play starting at 7:45 p.m.

Tickets, which are normally one dollar each, may be purchased from members of the NASA Softball League or District Representatives to the Activities Association for 50 cents for adults. Children accompanied by an adult will be admitted free.

Francis "Stumpy" Howard, retired employee and member of the Center's championship baseball team in 1929, will be on hand to present the championship trophy to the winning team in this year's NASA Softball League. The NASA All Star Softball team will also be presented to the fans.

NASA Night was sponsored by the Grays earlier in the season and approximately 2400 employees and members of their families turned out for the event.

NEW X-15 PILOTS NAMED

NASA has announced the addition of two new pilots to the joint NASA-USAF X-15 research program. The two pilots, Air Force Captain William J. Knight and William H. Dana, are expected to make their first flights this fall.

Dana, 34, is a civilian pilot-engineer at Flight Research Center. He has served as project pilot on a variety of flight programs, including the study of supersonic transport operating procedures. Dana, who received his master's degree in Aeronautical Engineering from the University of Southern California in 1958, has also piloted NASA's M2-F1 lightweight lifting body.

Captain Knight, 35, is attached to the Air Force Flight Test Center at Edwards Air Force Base. A 1964 graduate of the Aerospace Research Pilots School, he was project pilot on the F-5 NATO fighter. He was also selected as one of the original pilots for the now-canceled X-20 Dyna-Soar Program.

Both aviators, who have served as chase pilots on previous X-15 flights, are undergoing an extensive training program, both on the ground and in the air.

Dana and Knight will join the current four X-15 pilots: Capt. Joe H. Engle, USAF, John B. McKay, NASA, Maj. Robert A. Rushworth, USAF, and Milton O. Thompson, NASA.

The two new X-15 pilots will become the 10th and 11th men to fly the X-15, the world's fastest and highest flying aircraft. In addition to the current X-15 pilots, Neil A. Armstrong and Joseph A. Walker, both of NASA, Lt. Col. Robert M. White, USAF, Cdr. Forrest S. Petersen, USN, and A. Scott Crossfield, North American Aviation, have flown the rocket powered aircraft.

FOR SALE: Conn trombone. Powell, 838-0617.

FOR SALE: Beagle pups - $10. Johnson 826-4547.

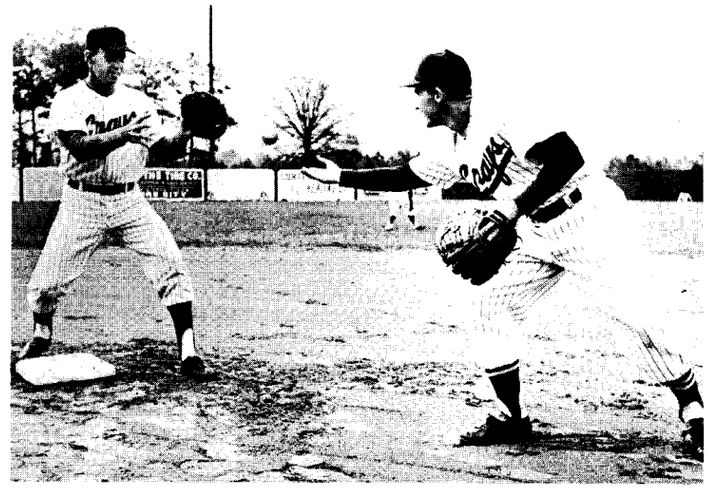
FOR SALE: 5-room house on 4-1/3 acres of land in Poquoson. Bunting, 868-5811.

FOR SALE: 1955 Oldsmobile - $195. Fiorella, CH 5-6833.

FOR SALE: Mahogany dining room suite with table, eight chairs, side-board, china closet, buffet. Verser, UN 8-4731.

FOR SALE: 1965 35 hp Mercury outboard motor - never used. Cluverius, 898-5058 after 5 p.m.

FOR SALE: GE portable TV with UHF antenna - $100. Newman, 877-4763.



Shown above are two members of the Grays baseball team who will be playing with the local team when they meet Greensboro at NASA Night on August 20. The players are Ken Peters (left) and Wayne Meadows.

NEW PERFORMANCE RATING PLAN

The new NASA agency-wide Performance Rating Plan is being instituted at Langley during the month of August. This plan is applicable to all permanent employees who have completed their probationary period. Employees are to be rated each year during the month in which they entered on duty and will be informed of their rating by their supervisor.

In addition to informing an employee of his rating, supervisors must discuss his rating and performance with him, discuss any training which will improve performance and inform the employee of his rights to appeal the rating.

The adjective ratings of "Outstanding," "Satisfactory" and "Unsatisfactory" remain unchanged. Only in the case of an "Outstanding" or "Unsatisfactory" rating will an employee be notified in writing. The criteria and recommendation procedures for "Outstanding" ratings remain the same and there is no change in the procedure for rating an employee "Unsatisfactory."

The complete Performance Rating Plan has been incorporated in the Langley Management Manual, Instruction Number 3400.4 and is available in all organizational units. Questions regarding the plan should be directed to the individual's supervisor or the Personnel Office.

FOR SALE: 3-bedroom rancher with den, screened porch and fenced yard. Eide, 826-2383.

FOR SALE OR RENT: 3-bedroom brick house in Brentwood. Morris, 595-0985.

FOR SALE: 10-passenger Austin bus - $550. McSmith, 722-8488.

FOR SALE: AKC registered German Sheperd pups. Crawley, PA 2-8406 after 6 p.m.

FOR RENT: 1 bedroom apartment near G.E.X. - $115 per month. Watkins, 826-7049.

FOR SALE: 1962 Volvo, 4-door 122S. Kelly, 877-2380.

FOR SALE: 1959 Opal, Foster, 838-0604.

FOR SALE: 2 female Labrador Chesapeake pups. Rollins, UN 8-9072.

FOR SALE: 18-foot Correct Craft inboard speed boat with Pontiac V-8 engine. Boykin, 838-1428.

SATURN I PROGRAM ENDS

The launching of the Saturn I (SA-10) on July 30 brought to a conclusion a seven-year long program. It was the tenth success in as many attempts for the two-stage Saturn I rocket.

The program was vital in developing the technology and testing systems, hardware and methods for manned lunar exploration. The larger Saturn V which will launch the Apollo spacecraft incorporates principles and hardware proven in the Saturn I program.

Of the many lessons learned, perhaps the most significant is the clustering of several large rocket engines. The power plant in the first stage of the Saturn I was a cluster of eight H-1 engines each with 188,000 pounds of thrust to give this stage 1,504,000 pounds of thrust.

Several other significant developments grew out of the Saturn I program. These included:

1. First extensive use of multi-engines and liquid hydrogen in the upper stages. The upper stage of the Saturn-I was the S-IV with six RL-10 engines which gave the S-IV stage 90,000 pounds of thrust. This, too, extended the state-of-the-art in the use of liquid hydrogen as a propellant.
2. Advancement of guidance and instrumentation technology.
3. Facility expansion, and development of new transportation modes for large rockets. (The Saturns were moved by special purpose barge and aircraft.)
4. Development of new fabrication techniques needed for larger rockets, and now being applied in the Saturn IB and Saturn V programs.
5. Orbiting meteoroid technology satellites, the largest instrumented satellites launched to date. The flight of Pegasus-C was the third launching of a meteoroid detection satellite.
6. Placing into orbit five early Apollo command and service modules thus proving the aerodynamics of the Apollo spacecraft.
7. Developing the capability of placing into Earth orbit payloads of more than 37,000 pounds. The seventh Saturn launch, SA-7, September 18, 1964, orbited a 39,200 pound payload and tested the Apollo launch escape system.
8. Guidance and instrumentation technology was developed and extended to other programs. The first five Saturns did not have instrumentation units, but five through ten had units which performed as predicted, including a "path adaptive system" first flown on the sixth Saturn. This system permitted a deviation in flight including the loss of an engine ("engine-out") without imperilling the mission. On the fourth flight one engine was deliberately cut off and on the seventh one inadvertently cut off, neither with detrimental effect.

LECTURE PLANNED AUG. 20

Dr. John W. Cell, Head of the Department of Mathematics, North Carolina State University at Raleigh, will visit the Langley Research Center on August 20. He will present a lecture on "Use of Integral Transform Method in the Solution of the Wave Equation" in the East Area Projection Room, Building 587, at 9:30 a.m. Interested staff members are invited to attend.

FOR SALE: 1964 Dodge Dart convertible. Decker, CH75135.
FOR SALE: 19-foot Deadrise boat with 1964 90 hp Johnson motor, fully equipped. Ellis, 851-1839 after 5 p.m.

THREE EMPLOYEES RETIRE

Three employees retired from the Center this month with a combined total of 66 years of Government service. John E. Terry, Electrical Systems Division, and Marion C. Morris, Mechanical Service Division, retired on August 8 and Willye G. Dunn, Scout Project Office, retired August 12.

Terry was born August 6, 1903 in Denison, Iowa. He graduated from Denison Senior High School and served in the U.S. Army from September 13, 1952 to April 9, 1943. He was self-employed in radio service and public address equipment from 1924 to 1942 and joined the Center staff on December 29, 1948 as an electronic instrument maker.

Morris was born January 7, 1905 in Benton, Illinois. He served in the U.S. Army from May 9, 1923 to June 6, 1926 and from October 17, 1933 to October 16, 1936. Before entering on duty at the Center on December 27, 1949 he worked at the Veterans Hospital in Roanoke and at the Kecoughtan Veterans Administration.

Miss Dunn is a native of Hampton. She graduated from Hampton High School and worked for the Virginia Electric and Power Company from April 1929 to August 1945. She entered on duty at the Center as a clerk-typist in the Procurement Division. She transferred to the Library in 1953 and was assigned to the Scout Project Office in 1963.

FOR SALE: 1/2 acre wooded lot in Pinehurst subdivision, York County. Siemers, 877-9471.
FOR SALE: 50 x 150-foot lot at Holly Beach, Gloucester. Faison, CH 5-1217.

NASA OFFICIAL OUTLINES GOAL FOR AERONAUTICAL RESEARCH

More speed and efficiency must continue to be the goals of aeronautical research programs, Dr. Raymond L. Bisplinghoff, NASA's Associate Administrator for Advanced Research and Technology, said in the third von Karman lecture of the American Institute of Aeronautics and Astronautics in San Francisco.

The lecture was named for the late Theodore von Karman, scientists who led the research efforts in modern aviation.

Referring to a chart showing how transportation as a whole has improved in recent decades, Bisplinghoff said, "It illustrates clearly that in aeronautical research we continue our acute appreciation of speed as a continuing incentive for progress.

"This appreciation embraces zero and low speed for the V/STOL vehicles combined with good cruise speed for faster transportation between dense urban areas, and hypersonic speeds to move around the world faster."

Bisplinghoff, who for the past three years has been responsible for all of NASA's research programs in support of aeronautics, said the role of aviation in meeting the transportation needs of the country and the world will be enormously increased over the next decade. He cited the V/STOL aircraft as "the foremost example of a new vehicle near realization."

Bisplinghoff finds there is real promise in both V/STOL aircraft and the hypersonic transport. For the hypersonic aircraft, however, many formidable problems must be solved in structures, materials and propulsion, he said.

Problems of lower speeds appear more manageable and the needs are more pressing. He pointed out that within 20 years, an estimated 130 million persons - half of the U.S. total population - will be living in our three main metropolitan areas. Within such areas, and similar ones abroad, exists an increasing demand for the "air bus" as a solution to growing transportation problems.

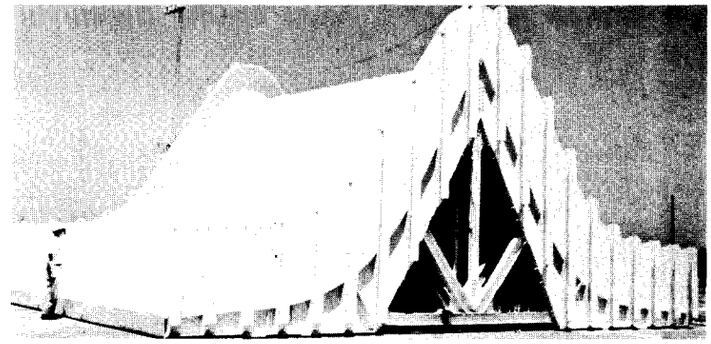
Bisplinghoff foresees another major advance in improved subsonic jets to carry more people on short-haul flights, where the supersonic transport will not have meaningful advantage. And he sees "another revolution" for the personal aircraft, primarily through improved control devices and flying aids.

For the hydrogen-fueled hypersonic transport, he finds three main possibilities. These are in moving more cargo from one point to another at costs lower than any other means; as first-stage booster vehicles for spacecraft launch; and in earth-to-orbit aircraft "offering the final closure between atmospheric and orbital flight."

The V/STOL, of which several types are now in development, is expected to be capable of flight in all kinds of weather from landing strips from 300 to 1500 feet long, and to fly at the same cruising speeds as the local-carrier airplane of today.

Bisplinghoff says the hypersonic transport would carry passengers as far as halfway around the Earth non-stop at speeds up to 8,000 miles an hour. Studies, he said, "indicate that hypersonic transports can have very attractive cruise efficiencies." Based on practical needs, an HST theoretically would be able to multiply the distance of travel without increasing travel time.

Structures and materials problems of the HST are results of low and high temperatures. Use of liquid hydrogen as a fuel means a minimum temperature of 423 degrees F below zero, while friction of the air at high speeds can generate temperatures of 4,000 degrees F and higher.



BREAKING THE HEAT WAVE - When the engines of one of NASA's big Saturn rockets are turned on at Cape Kennedy, this 180-ton deflector absorbs the heat shocks and shunts them away from the pad via these roller-coaster spillways.

'ROLLER COASTER' TAMES FLAMES

Undoubtedly the hottest place in Florida is the launch pedestal at Complex 37 during the liftoff of a Saturn I rocket.

NASA engineers estimate temperatures from exhaust flames that lick back on the pedestal at between 3,000 and 4,000 degrees F.

But despite the fact that these fierce flames beat down for eight to ten seconds, the time it takes the Saturn to clear its umbilical tower, there is little damage to pad or pedestal.

This is because a 180-ton monster, that resembles the first rise in a roller coaster, licks off heat almost like a duck sheds water. It's called a flame deflector.

It stands 25 feet tall and it's positioned just under the bird on the pedestal about a month before launch.

At liftoff, when the giant rocket first belches its roaring fire, the deflector rolls the flame out the sides of the pad for several hundred feet.

Built of reinforced steel, and its surface coated with a four-inch layer of special heat-resistant material, the deflector can take the super-heat with almost perfect immunity. But, like a sun-burned Florida tourist, it peels a little - losing about one-sixteenth of an inch of its surface in the terrific heat of each launch.

BOOKS FOR SALE

The following books are for sale at the NASA Exchange, Building 586:

"Static and Strength of Materials" by Bassin and Brodsky

"Essentials of Radio-Electronics" by Slursberg and Osterheld

"Elementary Metallurgy" by Frier

"Fundamentals of Industrial Electronic Circuits" by Richter

"Practical Industrial Electronics" by Annett

"Shop Theory" by Henry Ford Trade School

"Sheet Metal Pattern Drafting and Shop Problems" by Daugherty and Powell

GEMINI FLIGHT SET THIS MONTH

The eight-day Gemini 5 mission, the longest United States manned flight yet attempted, is scheduled to be launched from Cape Kennedy about the middle of this month.

NASA said, however, that many tests which must be conducted between now and launch, and the weather are vital factors in meeting the launch date.

Pilots for the 122-revolution flight are Astronauts L. Gordon Cooper and Charles Conrad. Backup pilots are Neil A. Armstrong and Elliot M. See.

The flight, the second for Cooper, will give him more time in space than any other man. His flight in Faith 7, May 15, 1963, was the longest of the Project Mercury series, 22 revolutions or 34 hours and 20 minutes.

Gemini 5 is the first flight for Conrad.

Primary objectives of the flight are:

1. Demonstrate and evaluate the performance of the Gemini spacecraft for a period of eight days.
2. Evaluate the performance of the rendezvous guidance and navigation system using the rendezvous evaluation pod.
3. Evaluate the effects of prolonged exposure to the space environment on the two-man crew.

Seventeen experiments are scheduled to be conducted during the flight. Five are medical, six scientific and six technological. Six of the experiments are sponsored by the Department of Defense.

Six of the experiments repeat experiments conducted on previous Gemini flights. They are in-flight exerciser, in-flight phonocardiogram, bone demineralization, electrostatic charge, terrain and weather photography.

New experiments include cardiovascular conditioning, human otolith function, basic object photography, nearby object photography, celestial radiometry, surface photography, space object photography, astronaut visibility, zodiacal light photography, cloud top spectrometer and visual acuity.

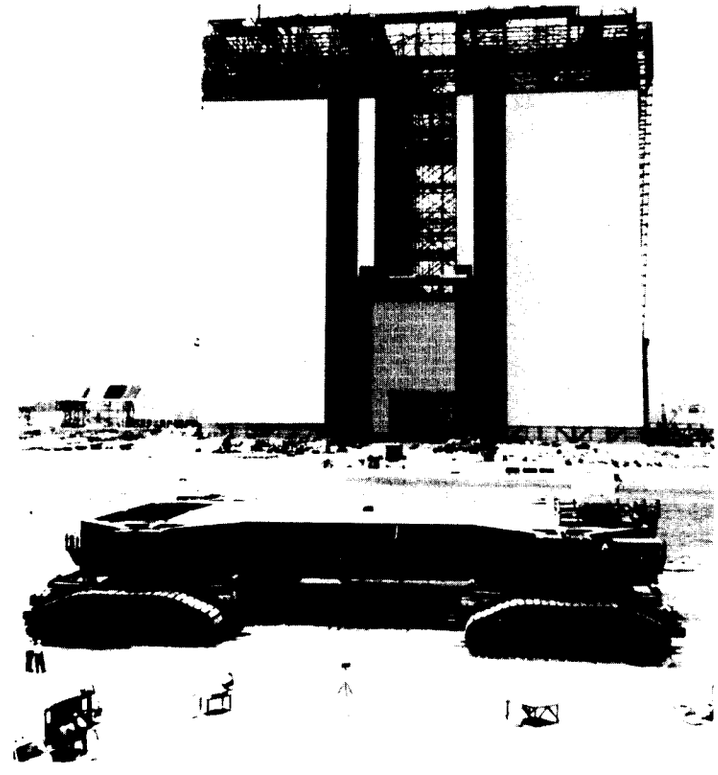
The eight-day mission is about the time required for an Apollo crew to fly to the Moon, explore its surface and return to Earth. Gemini 5 is expected to demonstrate that the prolonged weightlessness of a manned Moon landing mission is not a threat to the health of the crew and that well-conditioned, well-trained astronauts can perform effectively over the duration of such a flight.

New equipment on Gemini 5 includes the rendezvous radar and guidance system, developed for rendezvous and docking with an orbiting Agena rocket. A rendezvous evaluation pod will be carried in the adapter section of the spacecraft and ejected in space to simulate the Agena.

Instrumentation in the pod is similar to Agena instrumentation. It contains a rendezvous radio transponder, batteries, antennas and flashing lights. Its life expectance is about six hours.

Purpose of the rendezvous pod in Gemini 5 is to test equipment and provide practice in rendezvous techniques. Once the pod has been ejected the astronauts will pull away. Later they will seek it out and rendezvous. There will be no docking.

Use of a fuel cell as the electrical power source is also new to Gemini 5. It is a device which converts electrical energy from the reaction of two chemicals, hydrogen and oxygen. The fuel cell replaces the storage batteries previously used and will supply all electrical power for the spacecraft.



A PAIR OF SPACE GIANTS - The NASA's 6,000,000-pound crawler-transporter, the vehicle that will carry Saturn V moon rockets to launch pads on a specially-built roadway, is shown during recent demonstration at the Kennedy Space Center, Merritt Island, Fla. In the background is another giant, the Vehicle Assembly Building, where the 350-foot Saturn V and Apollo spacecraft will be assembled and checked prior to the 3-mile trip to the launch pads. The huge crawler-transporter becomes operational next September.

The essential difference between batteries and fuel cells is that the former store electrical energy while fuel cells manufacture it. Principal advantage of the fuel cell for a mission of this duration is that it provides more power per pound than the storage battery. On later missions, fuel cells may also provide water for cooling and drinking.

Gemini 5 will be launched by the Titan II into an orbit of about 100 to 170 statute miles. Landing and recovery will be in the West Atlantic Ocean about 500 miles southwest of Bermuda.

E. E. Christensen, Missions Operations Director for Manned Space Flight, NASA Headquarters, will act as Mission Director for Gemini 5.

Christopher C. Kraft, Manned Spacecraft Center, again will serve as Flight Director, a position he has held on every U.S. manned space flight. Launch Operations Director for Gemini 5 is Merritt Preston, Deputy Director for Launch Operations at Cape Kennedy.

WANTED: Ride from Wythe to W.A. on 8 shift. Tom Smith, 3426.

WANTED: Ride from Buckroe area to W.A. on 8 shift. Alligood, 4567.

FOR SALE: 2/3 acre wooded lot in Williamsburg area. Eide, 826-2383.

FOR SALE: 2-bedroom, 1-1/2-bath house near Langley Circle. Agnew, PA 3-8920.

DR. EUGENE M. EMME APPH

Langley Researcher

VOLUME 4, NUMBER 17 LANGLEY RESEARCH CENTER SEPTEMBER 10, 1965

LOCAL AIAA CHAPTER TO HEAR DAVID ADAMSON SEPTEMBER 15

David Adamson

The Hampton Roads Section of the American Institute of Aeronautics and Astronautics will open its 1965-66 season with a dinner meeting on September 15 at the Warwick Yacht and Country Club.

David Adamson, head of the Space Physics Section, Aero-Physics Division, will be guest speaker. He will speak on "Life in Other Worlds." In his talk Adamson will discuss the possibility that life, either as we know it or in some modified form, may exist outside the solar system. He will describe conditions which are favorable for development of life and where such conditions may exist, on the basis of what is known about the universe. Recent attempts to detect or communicate with civilizations will also be described.

Adamson, born in Sunderland, England, on May 10, 1920, has been employed at the Center since December 1954. He attended technical school in Newcastle-on-Tyne, England, and received a B.S. degree in Mechanical Engineering with distinction from Kings College, Durham University, England, in 1943. He began his career at the Royal Aircraft Establishment in aeronautical research after graduation. In 1948 he became a senior scientific officer at the Establishment.

He was assigned to the Langley Center in 1948 as an exchange research scientist and did research in the 9-inch Supersonic Wind Tunnel. Returning to the United States in 1951, he became a research associate and instructor in thermodynamics at Brown University. From 1952 to 1954 he was a senior research scientist at Johns Hopkins University Applied Physics Laboratory.

His avocation throughout his years of aeronautical research work were astronomy and celestial mechanics and, as important fundamental areas in these broad fields, his special interests were gravitational and relativistic effects in dynamical problems.

Adamson has given numerous popular lectures on astronomy, space science, relativity, and gravitation to technical societies, local schools and various local civic organizations.

He participated in setting up the Astronaut Scientific Training Program and gave a sequence of lectures to the

(Continued on page 8)

ADVANCED SOLICITATIONS OPEN UNITED FUND EFFORT

T. Aubrey Harris, Chairman of the Center's United Fund campaign, announced that the drive will officially open with an advanced solicitation of top staff officials. A general canvass of staff members will be held on September 24.

Assisting Harris in the campaign will be William B. Mayo, vice-chairman, and Robert W. Boswinkle, Advanced Gifts Chairman.

A dutch treat kick-off luncheon attended by division chairmen and other campaign workers will be held on Tuesday, September 14 in the private dining room, Building 1213. Guest speaker will be Dr. John E. Duberg, 1965 Peninsula United Fund Chairman.

A meeting of division chairmen and general solicitors will be held on Monday, September 20 at 9 a.m. in the Hangar, Building 1244. Guest speaker will be the Honorable Thomas N. Downing.

In seeking support of staff members during the drive Harris has issued the following statement:

"Between now and September 24 all of us will be thinking about our individual responsibilities toward our community as we prepare to meet them through our support of Langley's United Fund Drive.

"The needs of the various agencies we support through United Fund contributions are complex and varied, but it is important to recognize that each organization's requirements have been carefully reviewed, not only once but several times.

"Many Langley Research Center staff members have

(Continued on page 8)

Dr. Floyd L. Thompson, Center Director, launched the Center's annual United Fund campaign effort with his donation to solicitor Max C. Kurbjun. Looking on is Robert W. Boswinkle (left), Advanced Gifts Chairman.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, Building 587, telephone 2575

Editor.....Ruth Angel Verell
Staff Photographer..... Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ENGAGED. . .Making plans to desert the bachelor ranks is Richard W. Barnell, Dynamic Loads Division. He is engaged to Mary B. Juer, Petersburg, and plans call for a December wedding.

BABY DERBY. . .Celebrating the birth of a daughter, Angela Robin, are Betty, Analysis and Computation Division, and Roy Gordon, Mechanical Service Division.

WEDDING PLANNED. . .Wedding bells will ring tomorrow when Lois Harris, Personnel Division, and John Taylor, Research Models and Facilities Division, take their final vows at St. Mark's Methodist Church in Hampton. Nancy Harris, General Files, will serve her sister as maid-of-honor, and Marvin Rhodes, Structures Research Division, will be an usher.

REPRESENTATIVE TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on September 14 from 3 p.m. until 4 p.m. Mrs. Beverly Beale, Government-wide Service Plan representative, will be here on September 15 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Employee Services Branch, 2523, for an appointment.

WINNERS. . .Robert Peabody, Analysis and Computation Division, and Robert Forrest, Mechanical Service Division, won season passes to the Grays baseball games next year. Both Peabody and Forrest won the passes for selling the largest number of tickets to NASA Night which was held recently at the Peninsula Memorial Stadium.

FOR SALE: 3-bedroom rancher with 1-1/2 baths in Bethel Park. Covington, 826-3234.
FOR SALE: 1965 Honda Sport "50" - $200. Barritt, CH51754.
FOR SALE: Hammond concert electric organ and Leslie speaker system. Lingle, 838-1528.
FOR SALE: Bird cages size 24 x 24-1/4 x 30 and 18 x 19 x 31-1/4 inches. Riggin, 722-6087.
FOR RENT: Furnished or unfurnished 7 room house in Poquoson. Firman, 868-2311.
FOR RENT: 2-bedroom house in Stuart Gardens, available Sept. 18. Hamilton, 245-3153.
FOR SALE: 1956 Plymouth station wagon - $350. Dixon, 826-2943.
FOR SALE: Hampton-One sailboat with sails, trapeze rig, selfbailers and trailer - needs new mast and boom - $350. Kurzhals, 851-1246.

NASA will be represented when the Peninsula Community Theatre's 1965-66 season opens with the Broadway musical "Camelot" September 22-25 at the Newport News High School. Shown rehearsing one of the scores are (from left): Bob MacLachlan, Connie Kendall, Judy Gibbons, Sharon Haythorne, Olin Jarrett, Alberta Haraway and Gail Timmons, all affiliated with NASA. In addition to "Camelot," Peninsula Community Theatre productions will include "Take Her, She's Mine," "Sunday in New York," "A Man for All Seasons" and "Never Too Late." Membership applications may be obtained by calling CH 4-1411.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of September 13:

Monday - French onion soup, Swiss steak, grilled Canadian bacon, spaghetti with meat sauce. wieners and sauerkraut.

Tuesday - Puree of bean soup, Spanish pot roast, breaded veal steak, broiled ham slice, chili con carne.

Wednesday - Minestrone soup, country style chopped steak, fried oysters, veal stew, grilled cheese sandwich.

Thursday - Beef-vegetable soup, grilled steak, roast pork, fried fish sticks, barbecued sandwich.

Friday - Clam chowder, roast beef, shrimp Newburg, fried fillet of flounder, hot dog.

The menu for the week of September 20 is as follows:

Monday - Tomato-barley soup, fried clams, grilled pork chops, stuffed pepper, Spanish omelette.

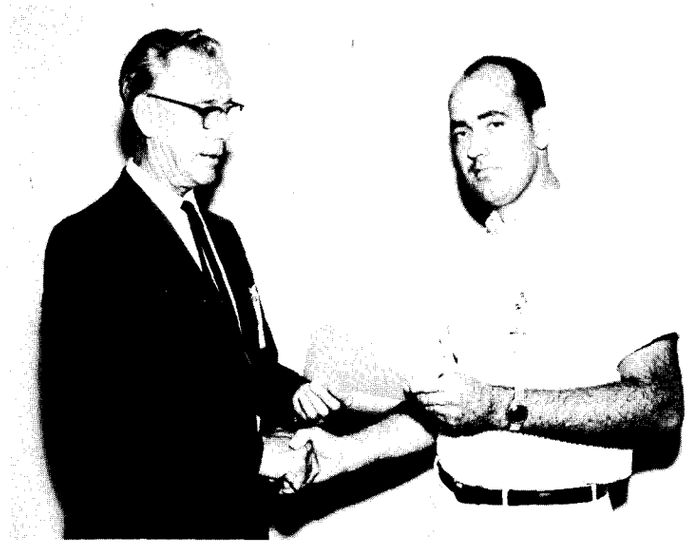
Tuesday - Split-green pea soup, Spanish pot roast, Polish sausage, liver and onions, fish cakes.

Wednesday - Chicken-vegetable soup, roast beef, barbecued spareribs, fried chicken, macaroni and wieners.

Thursday - Cream of tomato soup, grilled steak, fried shrimp, smoked pork sausage, tamale pie.

Friday - Clam chowder, sliced turkey with cranberry sauce and dressing, boiled ham, broiled fish, fried fish, beef ravioli.

FOR SALE: 3-bedroom house on Cherry Acres Dr. Ever-Hart, 722-0075.
FOR SALE: One-acre wooded lot in Maxwell Gardens, Kemp, 596-4854.
FOR RENT: 2-bedroom house with stove and refrigerator, available Oct. 1, located in Buckroe. Zender, LY 6-0248.



Earl R. Blymiller (left photo) and C. Calvin Davis (right photo) received a joint award for $100 for suggesting a "crimping die for printed circuit board." Making the award is William B. Mayo, Chief of Mechanical Service Division.

KNOW YOUR CREDIT UNION

Eunice Smith, Dynamic Loads Division, raises the general question of "dividends." Most members are satisfied just to know the rate paid, but there is much more to the subject than that. For instance, who decides it, how is the amount calculated for an individual member, what money earns dividend credit, income tax considerations, etc.

Each month the difference between income and expense goes in a "gain or loss" account (net earnings). At the end of the year 20% by law goes into the regular reserve (for losses due to bad loans, Etc.); the remainder is available for dividends, contingency reserves, etc. By the December board meeting, projections of this remainder are accurate enough to allow the board to set the dividend rate for the year. It may be less but cannot exceed (without dipping into miscellaneous reserves) the shares held-dollars available relationship. The rate is not announced until the annual meeting held the latter part of January, but the early determination allows the staff to get started on calculating the amount due each member. This amount is credited to the account about January 15.

For the past four years the rate has been 5%. To keep it there, though, a change in the share-input to loan-outgo ratio is almost certainly necessary. As a matter of self-interest, all "savers" would do well to consider the advantages of the credit union when it comes to borrowing. Interest rates are most competitive and there is that two-way insurance coverage at no extra cost. All it takes is a telephone call - NASA 4607.

Let's assume a dividend rate of 5%. Leaving out the accuracy verification checks and cross checks, the dividend due a member is calculated in the following manner. His ledger card is pulled and his credit built up backwards beginning with December 31 of the dividend year. Keep in mind that only the shares held on that date earn dividends, that a deposit must be made on or before the fifth of the month to earn any credit for that month, that a withdrawal at any time forfeits all previous credit earned, and that no credit is earned on odd amounts over an even $5. This is how it works:

Each month beginning with December is taken separately. The balance as of the fifth of the month is the absolute top for dividend credit that month. It or the lowest point subsequently reached (in the case of withdrawals) is divided by $5 to obtain "share-months" credit for the month. And remember, no share-months credit can exceed that of a later month. For instance, a dip in shares to $100 on December 31 means a share month credit maximum of 240 (20 x 12) even if holdings to that point had been a steady $500.

The 12 individual share-months credits are added and multiplied by a factor based on the established dividend rate of 5%. The result is the dividend.

A simple example: $5 in shares over the full 12 months; 12 share-months credit (1 each month); 12 x $.02083 equals $.25 ($5 x 5%).

Finally, for income tax purposes, the so-called "dividends" should be reported as interest. In the case of joint accounts, they should be included in the income of the husband or the adult involved. Where the amount is $10 or over, a special report is made to the member and the Department of Internal Revenue; where it is $100 or over, one is made to the Virginia income tax people. Remember that regardless of size, the dividend is income in the year paid - not the year earned. For instance, the tax on dividends credited on January 1966 will be payable April 15, 1967. Once again, to have the information when you want it, save your statements. The one including January 1966 will come in handy in 1967.

FOR SALE: 15-1/2-foot sailboat - $240. McLaughlan, 722-5447.

FOR SALE: Five tickets for child to World's Fair. Ramsey, 596-2449.

FOR RENT: 5-room house in Hampton. Robins, 826-3831.

FOR RENT: Single room. Keene, 596-8437.

WANTED: Driving combination from Newmarket to W.A. on 7:30 shift. Price, 4711.

WANTED: Two alternate drivers from Maxwell Gardens to E.A. on 8 shift. Ethel Horton, 2253.

WANTED: Ride to and from Old Dominion College starting Sept. 13 on Monday through Thursday evenings. Edna Braxton, CH 4-8559 after 5 p.m.

APOLLO: THE YEAR TO GET READY

This year, in widely separated parts of the nation, three giagantic engine test stands will be speeding the Saturn/Apollo development effort.

At NASA's Marshall Space Flight Center the S-1C development test stand has been completed. Here the first clustering of Rocketdyne F-1 engines has been made and the propulsion system "mated" to the first-stage booster vehicle, the S-1.

In some of the most significant ground tests of the moon program, the five F-1 engines are being fired simultaneously in the full throated roar of 7.5 million pounds of thrust, the prime requisite of the entire moon venture.

The experience gained at Marshall with the clustered firing of the F-1 will result in checkout and launch procedures that ultimately will be used in the moon launches at Cape Kennedy.

At the Santa Susana Field Laboratory in California, North American Aviation, Inc., engineers already have started the ground testing of the clustered J-2 liquid hydrogen engines, using the ponderous, steel-thick battleship complex that approximates the S-II, the 82-foot-long second stage of the Saturn/Apollo being developed for NASA.

The J-2 has been thundering during years of development with the Rocketdyne engineers, but this clustering, the mating of the five engines with the companion systems, opens an entirely new, significant development phase.

The experience gained at the Santa Susana battleship complex will be carried by North American crews down to the Mississippi Test Facility where they will operate the J-2 engine engine acceptance facility and S-II test stands for NASA.

At NASA's Mississippi Test Facility, where building cranes rear on the horizon like the booms of distant ships, the face of the earth, in the areas that surround the test stands, has been lifted five feet.

For the foundation of the test stands men have dug huge pits that penetrate areas formed 22,000 years ago in the restless shifting of the Mississippi River.

More than seven miles of canals have been dug. A ponderous lock that rivals, in a small way, the gates of Panama, will admit the barges bearing the first, the second, and the third stage of Saturn V. Engine testing may start late this year.

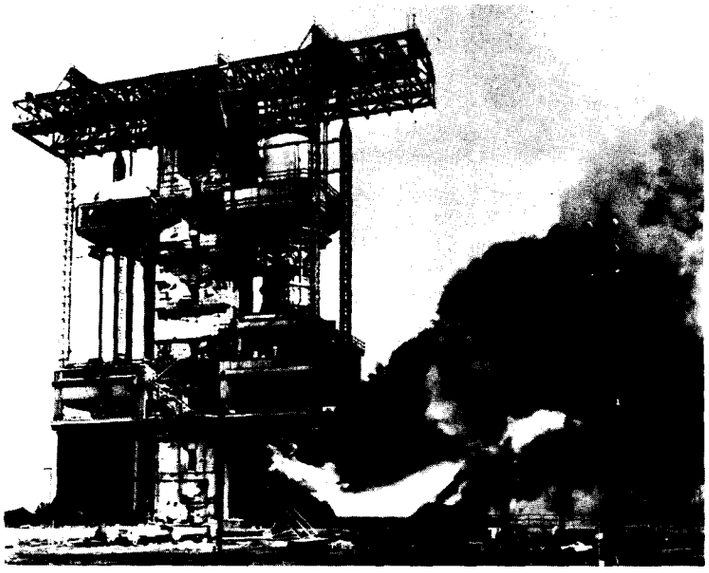
The mating of systems within a space vehicle and the proof positive that they will work in unison when called upon is a tedious, demanding and important task. Just one segment of that effort is being accomplished in the desert area of the Southwest.

Sixty-five miles north of El Paso, Texas, at NASA's Apollo Propulsion Systems Development Facilities, part of the White Sands Missile Range in New Mexico, the Aerojet service module engine is being "married" by North American Aviation, Inc., engineers to the multiple systems that are stacked inch-by-inch in the pie-shaped segments of the module.

Engineers are checking the tank pressurization system, the gimballing system, and the reaction control system.

They will be establishing the base lines, determining the parameters, so that when the flight plan is computed the engine will perform as programmed.

White Sands will be busy this year with Apollo activity. On the burnt east side of the Organ Mountains, several flights of Little Joe II will be made. The stubby rocket balances on its nose the service module, the command module, and the Lockheed launch escape system.



TIED DOWN MOON BIRD - A vast rumble and billows of smoke and steam mark the firing test of an F-1 engine as America moves toward its goal of putting men on the moon. These fireworks are evidence of the struggles of one bolted down engine tested at NASA's Marshall Space Flight Center.

It flings the modules high above the desert up to supersonic speed while the sequence of escape and safe descent is initiated. Little Joe flights have been made successfully before, but 1965 carries the testing for escape into much higher altitudes, much greater speeds.

The primary purpose of Little Joe II flights is verification of the escape system. A bonus is a test for structural integrity, for it is during these sudden aborts that the most destructive vibrations and pressures are encountered.

Testing for structural integrity covers a wide area of activity this year. The lightest possible metal consistent with safety has been used for the towering Saturn V.

The vibration from the booster engines is a direct threat. Thousands of pounds of propellants slosh in battering waves within the tanks; the unseen forces of compression act like a giant press.

Even the 365-foot length of the vehicle at launch adds to structural problems. It gets pushed and shoved by unseen winds.

At times the nose may be pointed in one angle while the exhaust of the booster engines will be pointed in another.

Contraction and expansion of metal is a constant threat from the time of take-off, but particularly after the booster stages have been dropped and the manned vehicles are coasting in space.

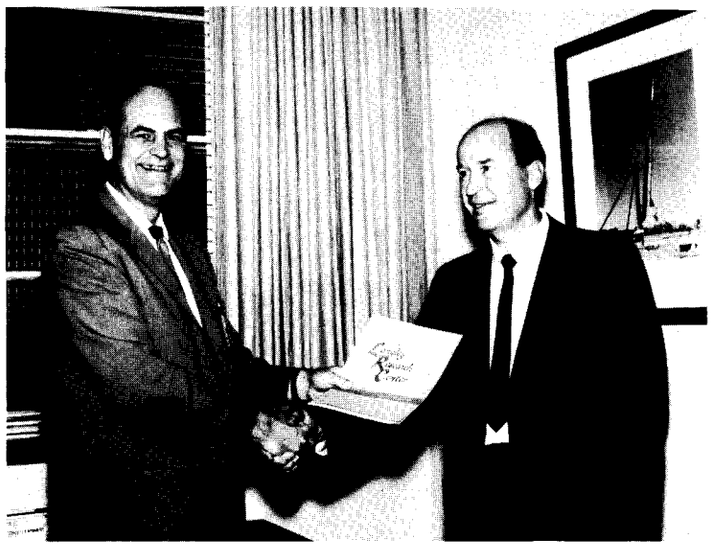
Overcoming the heat of reentry alone is a major task, one that has called for a great technological advance.

All these are being investigated this year in ground test.

WANTED: Driving combination from Deerfield-Camelot area to W.A. on 8 shift. McKinney, 4462.

FOR SALE: Repossessed 1961 Ford Galaxie Sunliner. Call Credit Union, 4604.

WANTED: Driving combination from Riverdale Plaza Apts. to E.A. on 8 shift. Loar, 2254.



Five employees recently received cash awards for suggestions that might result in the granting of patents. Top left - Charles E. Libbey (left) received a check for $300 for a "flexible wing deployed device." Making the presentation is Philip Donely, Chief of Flight Mechanics and Technology Division. Top right - Edwin C. Kilgore (right), Chief of Flight Vehicles and Systems Division, presents a $500 check to John W. Wilkey for suggesting a "velocity package." Lower left - Clifford H. Nelson, Lunar Orbiter Project Office, receives an award for "reentry communication by material addition" from Eugene C. Draley, Assistant Director. Lower right - William F. Cuddihy (center) shared the $400 award with Nelson. Stuart L. Seaton (right) received a $50 award for "electrostatic plasma modulator" and also a $50 check for "electromagnetic wave propagation device. Making the presentations is Howard B. Edwards, Acting Chief of the Instrument Research Division.

APPRENTICE SCHOOL NOTICE

The Fall Semester of the Apprentice School will start on Monday, September 13 and classes will be held in the Apprentice classrooms located on the first floor of Building 586.

Courses which are being offered and the instructors are:

Tuesday - Environmental Testing, D. G. McSmith; Engineering Drawing I, C. W. Osborn; College Physics III, F. A. Kern, and College Trigonometry, J. G. Shearin.

Wednesday - Engineering Drawing I, O. E. Schrader; Machinery's Handbook II, H. W. Caughman; College Physics II, V. G. Collins; College Trigonometry, L. G. Clark; College Physics III, G. C. Moen, and Mag. and D. C. Circuits, G. R. Bedsaul.

Thursday - Machinery's Handbook, S. E. Devan, Essentials of Radio II, A. L. Jones; Ind. Instrumentation, R. V. Fansler; Transistors I, R. O. Staib, and D. C. Fundamentals II, J. A. Coleman.

Friday - College Physics I, E. O. Wright; Metallurgy, H. A. Reid; Strength of Materials I, P. M. Dicker, and Basic Electricity, J. E. Gerringer.

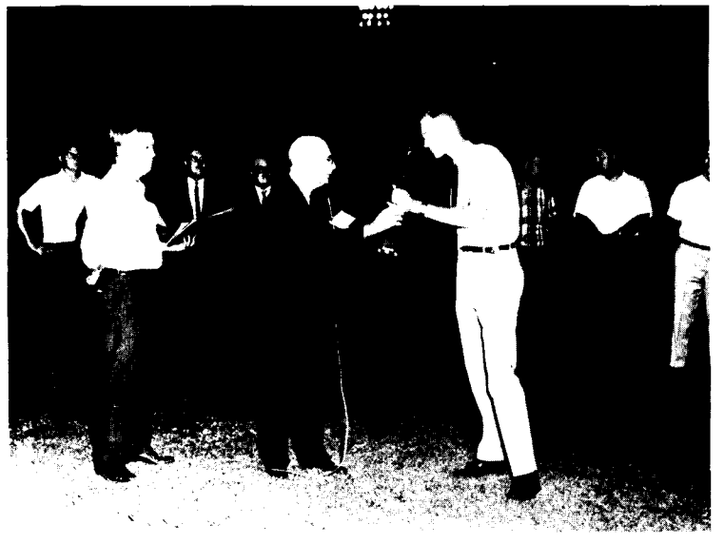
FOR RENT: Unfurnished 3-bedroom house with attached garage, located on Lake Hampton. Blanchard, 851-3397.

FOR RENT: Unfurnished 4-room house with 1-1/2 garage. Chappell, 8 Sunset Rd., 838-2202.

FOR SALE: 1936 Dodge with 1953 Plymouth engine - $100. Nayadley, 851-3192.

FOR SALE: Weaver 4-power hunting scope - $20. Trooper, 722-0018.

FOR SALE: 1961 Kenmore range and oven. Hauck, 596-9287.



Over 4400 persons attended NASA Night held recently at the Hampton Stadium to help the Peninsula Grays Baseball team pass the 100,000 attendance record for the season. The left photograph shows a number of Langley employees enjoying the game. In the right photo Francis "Stumpy" Howard, retired employee and a former member of the NASA Old Timers baseball team, presents the championship trophy to Allen Whitehead, captain of the Packers team who were winners of the NASA Softball League this year. Looking on (at left) is Lou Martin, manager of the Grays. Shown in the background are (from left): Herbert Pelton, president of the Activities Association; Ray Goodman, chairman of the Activities Committee; Bruce Amole, Activities Coordinator, and James P. Woods and Thayer Sheets, members of the Packers team. Last week the Grays won the Carolina League Baseball Championship.

EMPLOYEES DONATE BLOOD

During the Bloodmobile visit to the Center on August 25, staff members donated a total of 206 pints of blood.

Billy Dancy and Peter Korycinski reached the five-gallon mark. Completing their quota for three gallons were William Chapin, Robert Schade, George Bewley, Charles Hudson, and John Moore.

Two-gallon pins were presented to Newell Blayton, Jennings Duncan, Simeon Hunnicut, Sylvester Kubalak, James Link, Bruce Conway, James Holt, and B. W. Cocke.

Receiving one-gallon pins were Frank Lawrence, Heywood Roberts, James Mueller, Robert Ross, James Neal, Martin Leatherman, William Cordle, Bryce Kepley, David Varner, David Wineman, and Carl Sandahl.

Assisting during the visit were Dr. O. W. Ward Sr. and Dr. Charlotte Wild.

The Bloodmobile visits are sponsored by the American Red Cross which is a member of the Peninsula United Fund. Several pints of blood given during the visit were donated to replace blood used by a number of employees who are patients in local and out-of-town hospitals. The blood is given to the patient without charge.

COURSES OFFERED EMPLOYEES

A non-credit course in Mathematics I, Advanced Engineering Mathematics, will be offered starting Monday, September 20. If sufficient registrations are received, classes will be held on Monday and Thursday at 4:45 p.m.

Fees for the course will be paid by the Government. Employees wishing to register for the course should call the Training Office, telephone 2611, for the necessary forms.

A four-semester-hour credit course in Calculus I is being offered by the University of Virginia extension. The class will meet on Saturday, September 18 at 9 a.m. in Building 1347.

For further information call Kenneth Margolis, 2559.

PACKERS WIN CHAMPIONSHIP

Packers win again! For the third consecutive year the Packers team has won the NASA Softball League. During NASA night festivities at the Peninsula Grays War Memorial Stadium the team and Captain Allen Whitehead were honored and presented a trophy for their accomplishment during the past season.

The Packers finished in first place with an 11-4 won-lost record - just one game ahead of ACD. During the season the Packers sported a team batting average of .463 and displayed power at the plate as they crashed 30 home runs.

Individual batting honors for the season went to Thayer Sheets who led his team in home runs with 12 and batting average with a .608 mark while knocking in 39 runs. Buc Fichter and Hal Bush were close behind with batting averages of .578 and 510, respectively. Ficter and Bruce Wright combined with Sheets in the home run department to blast opponent pitchers for 21 of the team's 30 home runs. Morris Penny was the outstanding pitcher for the season and Allen Whitehead, Marvin Dow, Billy Brewer, David Duxberry, Mitch Thomas, and Sonny Anglin turned in exceptional defensive plays. Not to be forgotten was George Lawrence's brief but stellar performance at the plate in pinch-hitting roles - George had 11 hits in 11 times at bat.

The trophy now rests with the Packers as symbolic of a most successful season.

FOR SALE: Youth bed with spring and mattress - $15. Darnell, 596-8133.

WANTED: Home for black Persian cat. Smith, Lot 4, 125 Semple Farm Rd.

FOR SALE: 3-bedroom brick rancher in Hampton Terrace. Lee, 838-1309.

FOR SALE: 1955 Ford, 2-door custom, 6-cylinder, standard transmission. Ellison, 826-4730.

WOMEN IN GOVERNMENT

This is the first in a series of articles on Women in Government service.

Margret D. Clemmons, Accountant in the Fiscal Division, has the unique distinction of being the first woman employed as an Administrative Intern at the Langley Research Center.

Margret was born in Columbia, South Carolina, and graduated from Port St. Joe High School in Florida.

She attended Florida State University from 1955 to 1958 where she was working toward a degree in Business Administration. While at the university she met a young engineering student and in August 1957 she and Dewey L. Clemmons were married. Upon Dewey's graduation, she left school to accompany him to Hampton where he accepted a position as a Materials and Structural Engineer in the Applied Materials and Physics Division at the Center.

She also joined the NASA staff as a Mathematics Aide and resigned in 1962 to return to school. She received her Bachelor of Arts degree in Business Administration in 1964 from Old Dominion College and started her training as an Administrative Intern at the Langley Center on July 13, 1964.

She credits a deep interest in a high school bookkeeping course with influencing her determination to return to school and become an Accountant.

The Administrative Intern Program is a highly developed and rigorously controlled program initiated by Center management officials for the purpose of developing administrative management-type personnel who will serve as future leaders. Candidates for the Intern Program are selected from those who have passed Civil Service examinations to qualify them for professional administrative types of positions. To insure selection of the best available candidates, a continuous review is made of the lists of eligibles throughout the year. Those selected are given a variety of training for a period of one year in all administrative functions by a system of rotational assignments.

RIFLES OFFERED FOR SALE

The NASA Rifle League has turned over a number of rifles to the Activities Association. The Association will sell the rifles for $25 each on a first come first serve basis. Included are the following items:

Four Remington model 5 21-T 22 caliber bolt action target rifles with Lymon micrometer rear peep sight and hooded aperture front sight.

Four Winchester model 75 22 caliber bolt action target rifles with Redfield micrometer rear peep sight and hooded aperture front sight.

Four Mossburg spotshot model A 20x spotting scopes with stands.

Saturn spotting scope with stand.

Persons interested may see the rifles at the Activities Building or send the coupon below to Mail Stop 496.

NAME_____ Mail Stop_____

SECTION_____ Telephone Number_____

FOR SALE: Nikon-S with 50mm F2, 135mm F3.5 and case. Smith, 877-2815.

Margaret D. Clemmons, Accountant in the Fiscal Division, has the unique distinction of being the first woman employed at the Center as an Administrative Intern.

EMPLOYEES MAY ENROLL IN LIFE INSURANCE PLAN

A concentrated effort is being made at the Center to increase the percentage of eligible employees participating in the NASA Group Life Insurance Program. At the present time, slightly more than half of those eligible are enrolled.

Any employee occupying a full-time position and serving under other than a temporary limited appointment is eligible for insurance under the plan. To apply, it is required that an application card and a statement of health form be completed and sent to the Employee Services Branch, Mail Stop 305, with the first quarterly payment by September 24. Insurance coverage for persons applying during this period and accepted by the underwriter will be effective on October 1.

The present rate of $1.10 per quarter for $1000 of life insurance plus $1000 of accidental death insurance is one of the lowest available anywhere. Since the start of the plan, $599,000 have been paid to the beneficiaries of 92 Langley employees.

Each eligible employee who is not presently enrolled should give serious consideration to his insurance needs and to the part this extremely low-cost protection can play in obtaining maximum coverage at minimum cost.

GRADUATE PROGRAM NOTICE

Registration of all graduate students in Physics at the College of William and Mary will be held on September 17 at 3 p.m. in Room 109, Physics Building.

The general comprehensive examination in Physics at the College of William and Mary will be given as follows: Part I - October 1 and 2; Part II - October 7 and 8. These examinations will be held at 9 a.m. on the dates indicated in the Conference Room, Physics Building.

For additional information call the Training Office, 2611.

MISSION SAFETY 70

The Langley Research Center's frequency rate through July of this year was 2.93 disabling injuries per million man hours worked. To reach the goal set by President Johnson's Mission Safety 70 the rate should be near 1.0.

At the August meeting of the Executive Safety Committee, Duane McSmith, Safety Officer, briefed the committee on the Center's accident experience for the present calendar year. He pointed out that the Langley record is not in keeping with the goals of Mission Safety 70, with most of the accidents being falls, back injuries, and common industrial type injuries.

George D. McCauley, Safety Director, NASA Headquarters, briefed the committee on NASA's overall accident experience record, which is also above the goal set by Mission Safety 70. The "chargeback billing" by the Bureau of Employees Compensation was used to show the upward trend. McCauley stated that in Fiscal Year 1964 the cost to NASA Headquarters was $164,396 which has increased approximately $94,000 in Fiscal Year 1965 to $258,656. He pointed out that a part of this increase is caused by continuing benefits of major accidents and fatalities, as well as salary increases. The Langley cost figure has also shown an increase from $17,715 in Fiscal Year 1964 to $37,892 in Fiscal Year 1965 or more than a 100% increase in one year. These figures do not reflect contractor accidents.

McCauley also pointed out that the Langley accident experience record has been very good from a major accident standpoint and there appears to be no real trend in the cause of the accidents except that they fall in a general category of trips, slips, falls, and back injuries and not necessarily accidents that would be considered a space research problem.

AIAA GROUP MEETS SEPTEMBER 15

(Continued from page 1)

astronauts on Astronomy of the Solar System. He is frequently called upon to represent Langley in technical and policy matters relating to his fields of research. He participates as a professor in Langley's graduate study program.

Adamson is author of numerous NASA publications on research that he has conducted at Langley. He was Chairman of Evaluating Group on Radiation Hazards of the Apollo Technical Evaluation Subcommittee and headed the working group on Environmental Hazards during Langley Lunar Mission studies.

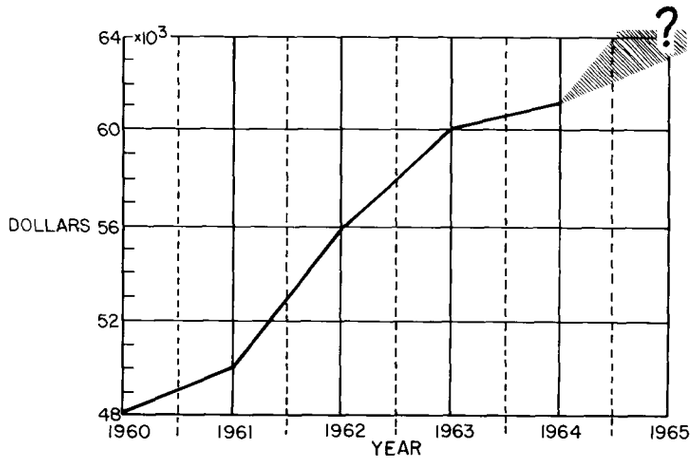
The meeting will be preceded by a social hour at 6 p.m., followed by dinner at 7 and the business meeting at 8.

Reservations may be made by calling L. W. Enderson, 596-6702; Robert Keynton, 826-5549, or Charles Tynan, 877-2642, by noon on Monday, September 13.

FOR SALE: 1959 Taunus station wagon - $250. Lovelace, 877-2841.

FOR RENT: 4-bedroom, 2-story furnished house in York County. Lovelace, 877-2841.

LRC UNITED FUND



The above charts shows the amount contributed to the United Fund by Center employees during the past five years. The total has risen steadily from $48,000 to $61,000. Campaign officials hope this year to see contributions or pledges pass the $65,000 mark.

UNITED FUND CAMPAIGN

(Continued from page 1)

helped from time to time in the budget review process of individual agencies and of the Peninsula United Fund itself, but general knowledge of how budgets are prepared is not widespread.

"The major goal of the budget process is fair distribution and maximum benefits for those in need of help.

"Each PUF agency begins by preparing an estimate of the funds it feels will permit it to do an adequate job. The agency's own board of directors - each a resident of the Peninsula - looks carefully and critically at each item, seeking always to make the best possible use of funds which never seem enough.

"Individual agency budget requests are then sent to the Peninsula United Fund, where each is again reviewed by a committee of Peninsula residents serving the community.

"Each Center staff member should keep in mind that a great deal of careful preparation and rigorous review has been necessary to assure that his contribution will accomplish the greatest possible good among those in our community who require our help."

SPOT BID SALE: The Langley Redistribution and Marketing Activity will have a local spot bid sale on September 24 at 10 a.m. at Building 965. Inspection of property will be September 13 to September 23.

FOR RENT: Goose and duck blind on Pamunkey River by season, furnished cabin also available. Jones, 826-2377.

FOR SALE: 3-bedroom brick rancher in Riverdale. Hulcher, 838-1259.

FOR SALE: 1963 edition, 15 volume Comptons Picture Encyclopedia - $105. Peterson, UL3-2280, Norfolk.

FOR SALE: 1953 Chevrolet - $125. Jones, 877-4987.

FOR SALE: 1963-1/2 Comet, custom 2-door - $1395. Parker, 838-3267.

FOR SALE: VEMCO drafting machine, 16-inch, w/o scales- $35. Hilt, 877-2478.

Langley Researcher

VOLUME 4, NUMBER 18 LANGLEY RESEARCH CENTER SEPTEMBER 23, 1965

A meeting of division chairmen and general solicitors for the Center's United Fund drive was held Monday in the Hangar and guest speaker was the Honorable Thomas N. Downing (second from left). Shown with Congressman Downing are (from left): H. Wescott Cunningham, chairman of the Federal Division; Dr. Floyd L. Thompson, Director of the Langley Center, and Dr. John E. Duberg, chairman of the Peninsula United Fund.

CHANGE MADE IN BOND DATING

As a part of its continuing effort to make payroll savings bonds attractive to all employees of the Government, the Treasury Department has recently announced a liberalization in its rules regarding the "average dating" of bonds of $50 face value or more.

Formerly, bonds of the value of $50 or more were dated, for interest purposes, as of the first of the month in which payment for the bond was completed in those cases where accumulation of the purchase price required less than 5 pay periods. Now a new rule, "average dating," will be applied to $50 and higher face value bonds without regard to the number of pay periods required to accumulate the purchase price of the bond; that is, the bond will be dated at the beginning of the month in which the bond is half paid for. Effective with bonds purchased September 1965 and after all $50 or more denominations are calculated under this new procedure.

The "average dating" principle is not applied to bonds of less than $50 face value. For example, a $25 bond (maturity value) will be dated as of the first day of the month in which the employee's account accumulates the total purchase price of $18.75. In view of this fact, all employees who now subscribe, or plan to subscribe, to savings bonds in the amount of $25 face value are urged to change their subscriptions to bonds of not less than $50 face value. To do so will ordinarily result in a minimum of one month's additional accumulation of interest.

(Continued on page 3)

ONE-DAY SOLICITATION SET FOR TOMORROW IN DRIVE

Tomorrow a corps of over 300 solicitors will contact each employee in an effort to complete the Center's United Fund effort in an intensive one-day campaign, according to T. Aubrey Harris, Chairman of the Center's drive.

The pace for the Center's effort was set this week when the advanced solicitation of key personnel was conducted under the direction of Robert W. Boswinkle, Office of Assistant Director.

Boswinkle reported that as of press time on Tuesday, advanced gifts had reached a total of $28,055.30. This represents an average donation of $48.88 from 574 staff members. Boswinkle stated that the total is expected to reach a higher figure as a number of persons have not been contacted because they are on travel or leave.

Last year staff members, contractors and representatives

(Continued on page 3)

Shown above are the advanced gifts solicitors and division chairman for the United Fund drive. Front row (from left): Robert H. Turner, Norman Silvers, Aubrey O'Kelley, Malcolm P. Clark, David A. Willment, William H. Phillips, P. M. Lovell, David G. Stone, Abraham Leiss, and Robert W. Boswinkle. Second row - Edward A. Howe, Harris B. Pate, A. Gerald Rainey, Cletus J. Vincke, Henry A. Fedziuk, David R. Johnson, and Dr. Robert W. Leonard. Third row - B. M. Wilson, Eugene W. Fadely, Milner, H. Eskew, John T. McShera, and John L. Hudson. Fourth row - Sherwood L. Butler, William W. Metz, Milfred E. Cook, Percy R. Keffer, and Charles F. Barnett. Fifth row - John W. Paulson, Max C. Kurbjun, Floyd Jennings, Marvin Forrest, Dale F. Emswiler, Mitchell Bertram, E. Barton Geer, and Baxter C. Carr.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, Building 587, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

DIAPER LINE...Announcing the birth of a daughter, Leslie Kemble, on September 8 are Jo Anne, Administrative Service Division, and James H. Neal, Electrical Systems Division. The proud grandfather is Joseph S. Cross, Research Models and Facilities Division.

IAM MEETING NOTICE...The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, October 5 at 7 p.m. at the Central Labor Union Hall, Newport News.

NEWLY WEDS...Wedding bells rang on September 1 when Merton Sussman, Instrument Research Division, took his final vows with Toby Stark, Norfolk.

COURSE OFFERED...A four-semester-hour credit course in Calculus I is being offered by the University of Virginia extension. The class meets on Saturdays at 9 a.m. in Building 1347. For further information call Kenneth Margolis, 2559.

GLAUCOMA CLINIC...A Glaucoma Screening Clinic will be held at York High School on October 6 from 7 p.m. until 10 p.m. The clinic is sponsored by the York and Poquoson Lions Clubs and the Virginia Society for the Prevention of Blindness. The screening is free and all persons over 35 and those with a history of glaucoma in their families should attend.

BOATING CLASSES...The Hampton Roads Power Squadron is offering a free 10-week course in boating. The course covers safety afloat, seamanship, rules of the road, and compass navigation. Persons interested may register on September 28 at 7 p.m. at Ferguson High School.

MARIONETTE SHOW...The Newport News Branch of the American Association of University Women will present the Nicolo Marionettes in "Mowgli the Jungle Boy" on Saturday, October 16 at Ferguson High School. Two shows have been scheduled with one starting at 10 a.m. and the other one starting at 2 p.m. Admission is fifty cents.

OPERATIC SOCIETY...The Newport News Operatic Society will open its 1965-66 season on October 8 and 9 with Puccini's opera "Madam Butterfly" at the Newport News High School. Starring in this famous opera will be Barbara Shook as Cio-Cio-San, Robin Roark as Lt. B. F. Pinkerton, Dorothy Newsome as Suzuki, and Gene Christman as Sharpless. The opera will be conducted by Stevenson Barrett of New York. In the chorus are Florence Leonard, wife of Dr. Robert Leonard of Structures Research, and Gloria Thomas, wife of James Thomas of Dynamic Model Shop. Climaxing the season on March 18 and 19 will be Leoncavallo's "Pagaliacci," and a ballet by Bayer "Die Puppenfee." Information and tickets may be obtained by calling 596-6212 or 595-2352.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of September 27:

Monday - Beef broth with barley, Swiss steak, chicken and dumplings, clam croquettes, hamburger.

Tuesday - Cream of potato soup, roast veal, grilled pork steak, fried fish sticks, chili con carne

Wednesday - Chicken-noodle soup, baked Virginia ham, country style chopped steak, fried chicken, baked hash.

Thursday - Puree of bean soup, grilled steak, baked Canadian bacon, chicken croquettes, wieners and sauerkraut.

Friday - Clam chowder, braised short ribs over rice, broiled fish, fried fish, barbecued sandwich.

The menu for the week of October 4 is as follows:

Monday - Split green pea soup, roast ribs of beef, chicken shortcake, smoked pork sausage, western omelette.

Tuesday - Cream of tomato soup, half-pound chopped steak, baked stuffed pork chop, fried chicken, macaroni and wieners.

Wednesday - Puree of bean soup, Spanish pot roast, baked ham, liver and onions, fish cakes and cole slaw.

Thursday - Vegetable-beef soup, grilled steak, half-dozen fried oysters, meat pie, cheeseburger.

Friday - Clam chowder, beef stroganoff, boiled ham, broiled fish, fried fish, beef ravioli.

TOUCH FOOTBALL...Play has started in the NASA Touch Football League and the scores for the first week of play are as follows: Bombers 18 - Boozers 7, KNADS 25 - Packers 7, Sixty-Niners 69 - Redskins 6, Boozers 14 - KNADS 20, Bombers 13 - IRD 0, Packers 25 - Sixty-Niners 12.

WANTED: Ride or driving combination from Stuart Gardens to W.A. on 7:30 shift. Holt, 4521 or 4855.

UNITED FUND CAMPAIGN

(Continued from page 1)

of local companies assigned to the Center donated or pledged a record total of $64,285.38. This figure represented a total of $62,817.88 from 4026 Center employees for 95.4 percent participation and an average contribution of $15.60. Contract employees donated $1,467.50 to the effort.

Harris stated that he is confident that the Langley staff will live up to its reputation of being a leader in the community effort. He also declared that pledges have always meant the success of such a drive and he urged employees to use the pledge system as quarterly payments spread out over the year permit an employee to make a more generous contribution.

Harris reminded staff members that, although he is anxious to put the drive over the top tomorrow, pledges and cash donations will be accepted by solicitors after the one-day campaign.

Division chairmen, who are directing the activities of the corps of solicitors, are reminded to make a report by the end of tomorrow to the respective financial chairmen to facilitate a proper evaluation of the one-day drive effort.

Barbara Durling, Building 1229, telephone 4458, is West Area financial chairman and Helen Willey, Building 641, telephone 2631, is East Area financial chairman.

CLUB OF THE MONTH

One way to see stars is to bump your head. Aside from being uncomfortable, the viewing time is a bit short to be profitable. A more practical way is to use a telescope, and this is what you will find the members of the Langley Skywatchers Astronomy Club doing on many clear nights.

The Skywatchers Astronomy club is a member club of the Activities Association and is composed of NASA employees and their families with a few special exceptions. Certain people with special skill or knowledge may receive associate memberships. Any NASA employee or member of his family is eligible for membership. Anyone with any interest at all is invited to attend the meeting or viewing session without having to become a member. The membership is composed of shop workers, engineers, administrators and many other categories - all with a common interest in astronomy.

Meetings are held once a month, usually when a clear night is forecast, to discuss business and also have a viewing session.

The club officers are: Leonard Weinstein, president; Wilbur Gaskins, vice-president, Edward Taylor, secretary, and Maxwell McNear, treasurer.

Currently the members of the club are building an observatory with a reflecting telescope of sixteen-inch aperture. The site, which was made available by NASA and the Activities Association, is located about fifty yards north of the Activities Building. Final plans for the building and telescope have been completed and the concrete foundation for the building has already been poured. Many of the main parts of the telescope have been acquired including the main mirror and the main part of the mounting.

There has been a lot of help and cooperation including outside sources, but much work remains to be done before the big telescope is in operation. The estimated completion date is December.

The Center launched its advanced solicitation for the annual United Fund campaign last week. Participating in the program were (from Left) John L. Heins, Associate Director of PUF; Robert W. Boswinkle, Advanced Gifts Chairman at Langley; Hugh D. Adams, Vice-President, Bank of Hampton Roads, and T. Aubrey Harris, Chairman of the Center's campaign.

IEEE SECTION MEETS SEPT. 30

The Hampton Roads Section of the Institute of Electrical and Electronic Engineers will meet on Thursday, September 30 at the Holiday Inn on Mercury Boulevard.

Guest speaker will be William F. Croswell, Instrument Research Division. His subject will be "Antennas for Space Applications."

The meeting will be preceded by a social period at 6:30 p.m., followed by dinner at 7:15 and the business meeting at 8.

Reservations may be made by calling Bob Faust, 3332, Frank Strehle, 4811, or Frank Senft, 3461, by noon on September 29.

BOND DATING CHANGE MADE

(Continued from page 1)

In order to take advantage of this change in the rules, an employee need not change the amount of his allotment, but simply change the face value of the $25 bond to $50 or more. In this connection, however, employees are urged to consider increasing the amount of their allotment. According to officials, the Payroll Savings Plan is still the simplest, easiest, soundest plan yet devised for systematic saving.

The forms necessary to upgrade bonds are available from the attendance clerks or the Payroll Office, telephone 2284.

WANTED: Ride from 22 Twin Lakes Circle, Lakeshore Apts. to E.A. on 8 shift. Jewell Bradfield, 2557.

WANTED: Two alternate drivers from Northampton to E.A. on 8 shift. Owens, 2587.

FOR SALE: Assortment of plate blocks, mint sheets, and first-day covers, also streamlined weather tight luggage carrier for station wagon. Miller, PA 3-4720.

FOR SALE: Four Yorkshire Terrier pups, 2 males and 2 females. Guess, Portsmouth 399-7271.

APOLLO: THE YEAR TO GET READY

At NASA's Marshall Space Flight Center the entire stack of Saturn V is to be shaken and vibrated, the vibrations being measured and their effects being determined. The same type of test is being conducted at North American Aviation, Inc., in Downey, Calif., with that effort pinpointed at the command and service module.

Vibrations can rip off cabin instrumentation; if severe enough they could render the astronauts incapable of action; sympathetic vibrations could destroy the modules and the entire Saturn/Apollo vehicle.

The object of the ground testing, the controlled tilting and shaking, is to discover and label the vibration; determining the frequencies at which the modules start vibrating badly. The engineers then supply corrective action, device dampening measures and strengthen the material within weight limits.

At North American Aviation's Space Division the conical-shaped command modules are being swung in short, vicious arcs from a long pendulum beneath a 143-foot tower, plummeting into earth and into water to study the effect of jarring impact on the crew couch supports and on the structural integrity of the command module itself.

More than 100 drops have been made, and the tests will continue this year, for the final moments of the moon journey must be guaranteed to be safe.

Thin-skinned metal is threatened not only by impact, but also by distortion from heat and cold.

A rocket nose cone may be exposed to high temperatures and pressures for about 60 seconds. NASA's Apollo command module, screaming back to earth through a narrow corridor of reentry, will be exposed to temperatures as high as 5,000 degrees F. for more than 2,000 seconds.

The dark plastic material developed by the Avco Corp. for the Apollo heat shield is 100 times more effective than that used on missile nose cones, yet it has only one-quarter the weight.

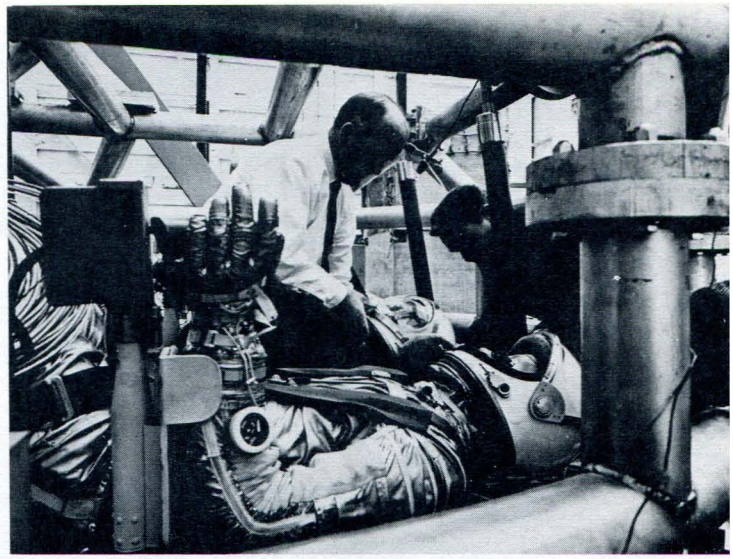
But despite the advance in weight and effectiveness, the material still can't be applied indiscriminately. Every inch of the exterior of the command module has been searched by a computer, and the ablative material in the 350,000 honeycomb recesses dips and rises in graph-like motion, its thickness determined by computer calculation.

The tasks confronted by engineers for ground testing the ablative heat shield are monumental. It is impossible, at this time, to duplicate simultaneously the heat, the pressure, and gas envelope conditions that will be encountered in the 2,000-second reentry.

Avco's test approach has been to bury thermocouples in two-foot specimens of ablative material, then bring the temperature up to a 5,000 degree level with radiant lamps.

As the test proceeds, the engineers get a series of readings from the buried thermocouples, and they know the recession rate of the charring material on the surface. The data from this is compared with an analytical model devised on a computer. From this comes assurance.

The task is to block the 5,000 degree exterior heat that tries to pass through the hottest part of the heat shield and tame it down within a few inches to an acceptable 600 degrees at the thin-skinned face of the inner-crew compartment. At that surface the engineers pick up new challenges in distortion of metal. They may have, simultaneously, heat on one side, frigid cold on the other.



TORTURE TEST FOR MATERIALS - It takes vibration pressure and impact tests to determine the strength o materials for the hardware in Project Apollo. In this rugged test unit, instrumented Apollo astronaut dummies ar given severe vibration workouts.

To prove the strength of the material the engineers have devised a new test tool, a combined furnace and refrigerator that sears the base of the module with radiant hea at 600 degrees while cascading liquid nitrogen down the far side of the capsule at temperatures of 320 degrees below zero.

The long moon journeys in the near-vacuum of space have occasioned ground tests involving some of the larges and most advanced engineering tools yet devised in this country.

High altitude is a problem. Liquids, materials, even entire systems behave differently in space than they do here on earth. Some tests demand a close simulation of outer space.

An example is the Apollo service module high-altitude engine. A high-altitude engine fired in atmosphere is reluctant to reveal characteristics that blossom once it's floating far out in space, free from earth pressures.

Even its thrust rating is sharply different. Beyond that the engine must coast for long periods in the near-vacuum of space, be heated by the sun, chilled by the black void. How do you test it and get accurate data, proof of reliability, demonstration of durability?

At NASA's Manned Spacecraft Center the stacked command, service, and lunar excursion modules will be swallowed within a ponderous metal bottle 120 feet high and 65 feet in diameter.

A steel door will be bolted shut, and the air sucked out until a simulated altitude of 80 miles is reached. Carbon arc units will elevate the temperatures on one side of the modules to simulate the relentless heat of the sun in outer space; on the other side the temperature will be dragged down to 280 degrees below zero to simulate the heat sink of space.

At the culmination of a series of tests, astronauts will enter the chamber and the command module, then will "leave the world," approximating as closely as humanly possible, the long flight in space.

It will be proof here on earth of what can be done on the way to the moon.

BETTER EMPLOYEE HEALTH CARE

President Johnson has called on Federal agencies to reduce the waste resulting from employee sickness and disease through a strong occupational health service program. He issued the following statement outlining his desires for the maintenance of employees health.

"The efficiency and productivity of Government employees is one of our primary concerns. We have made excellent progress in reducing costs and improving operations and will continue to press vigorously for savings and increased efficiency.

"Employee productivity depends on a number of factors - motivation, training, challenging work, fair pay, and recognition of superior performance. But there is another factor that we must not overlook - good health. In some ways it is the key factor.

"Good health and good work go together. Within the Government itself, we must do all we can to avoid the waste that results from sickness and disease. The Federal Health Benefits Program provides prepaid health and medical protection to our employees. But it is just as important to provide for a strong preventive health service program.

"Each year about 20 million days of sick leave are taken Federal civilian employees. If we can reduce the amount of sick leave taken by the average employee by just one half day, it means the equivalent of over one million man-days per year. We will improve the motivation and productivity of our employees and at the same time reduce costs through better placement and utilization.

"In the final analysis, it is up to each employee - and each top official - to take care of his own health. Health is a personal responsibility. I want to emphasize that.

"But we can be a good employer. We can help our workers to maintain their health and thereby prevent the kind of illness and disablement that brings discouragement, hardship, and loss of productivity.

"Private industry in the United States discovered long ago that a good employee health maintenance program is a paying proposition. The Federal Government has not kept up with the example set by private employees.

"I want that situation to change.

"I want the Federal Government to start to catch up with the practices of our efficient private enterprise - and in time become a model.

"We must be prepared - to the best of our ability - to assure our employees of:

--prompt attention to on-the-job illness and injury

--correction of working conditions that may be detrimental to employees' health

--education in health maintenance

--health examinations, including in-service examinations as needed, and

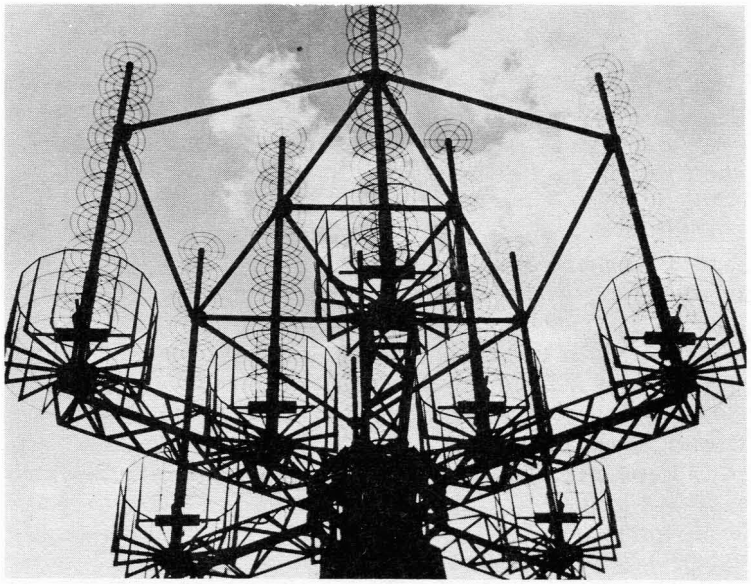
--disease screening examinations and immunizations.

"I repeat that the individual employee must bear the primary responsibility to obtain frequent health checkups, and otherwise to take proper care of himself."

WANTED: Ride from Wythe Shopping Center to W.A. on 8 shift. Ferro, 4686.

WANTED: Ride or driving combination from Shell Rd. and Celey St. to W.A. on 8 shift. Couch, 4871.

WANTED: Ride from Warner Rd., Todds Lane, to E.A. on 8 shift. Jean Miller, 2207.



Wheels within wheels is the impression given by this giant space tracking antenna situated in a remote section of North Carolina's Pisgah National Forest. The antenna is part of NASA's Rosman, N.C., tracking facility located far from the interference of man-made electrical devices.

PILOT-ASTRONAUTS TO BE SELECTED

NASA will begin immediately recruiting to select additional pilot-astronauts for manned space flight missions.

To be eligible for selection applicants must:

1. Be a citizen of the United States; be no taller than six feet; and have been born on or after December 1, 1929.

2. Have a bachelor's degree in engineering, physical or biological science.

3. Have acquired 1,000 hours of jet pilot time or have been graduated from an armed forces test pilot school.

Military applicants must apply through their respective services. Others should send applications, postmarked no later than midnight, December 1, 1965, directly to: Pilot-Astronaut, Post Office Box 2201, Houston Texas 77001.

All applicants must be able to pass a Class I flight physical examination, which requires 20/20 uncorrected vision. Civilian applicants and military reservists should submit a Standard Civil Service Form 57, Application for Federal Employment, available at all United States Post Offices, or a resume of their employment experience and academic training. Civilian applicants also should send a statement of their total jet flying time.

The selection process will be completed next spring, and the new pilot-astronauts will report for duty at the NASA Manned Spacecraft Center in the summer of 1966.

The criteria are the same as those used in selecting 14 pilot-astronauts in 1963, with the exception of birth date.

There are presently 28 pilot-astronauts and five scientist-astronauts participating in the NASA manned space flight program. Recruitment of additional pilot-astronauts is necessary to insure availability of an adequate number of flight crews for Project Apollo and future manned missions. Within the next year NASA plans to recruit additional scientist-astronauts.

WANTED: Ride from Norfolk to W.A. on 8 shift. Childs, 4591.

WANTED: Alternate driver from Windsor Great Park to W.A. on 8 shift. Lamar, 4540.

ARCHITECTS DESIGNING ERC

NASA has authorized architects to proceed with detail designs for a 26-story tower building, a three-story microwave laboratory and an auditorium-cafeteria building at the Electronics Research Center, Cambridge, Mass.

The announcement was made by Dr. Winston E. Kock, Director of the Center. Construction of the three buildings is expected to begin next spring, provided approval is given for urban renewal proceedings in the Kendall Square, Cambridge site.

The first three buildings, including the tower structure, will be built with $15 million in funds already approved by Congress for construction of the Center. Total cost of the Center has been estimated at $60 million.

In addition, Dr. Kock said the space agency has authorized the start of advance planning for additional laboratory and administration facilities within the site, including a second 26-story tower.

The high rise-low rise design concept was proposed for NASA by the architectural team of Edward Durrel Stone, Giffels and Rossetti, and Charles A. Maguire Associates.

The 378-foot tower will be built with pre-cast concrete panels on reinforced concrete frame and will be 84 feet square. It will have a basement, lobby floor, 22 laboratory floors and three floors of machinery. The building will house the Center's Qualification and Standards Laboratory and the Electronic Components Laboratory, and a portion of the Engineering and Administration Functions.

The three-story Microwave Laboratory building to the east of the tower building will have special design facilities, including a 17-foot high basement for special purpose laboratory equipment.

The auditorium building will be constructed south of the tower and will have a 350 seating capabity. Below the auditorium will be a basement cafeteria. All three buildings will be connected by corridors at the basement level.

Dr. Kock said the site will be appropriately landscaped and will provide a highly attractive addition to the area.

"We are pleased that plans are moving along toward the construction of the Center," Dr. Kock said, "because we feel that the Center will perform a vital function in our nation's exploration of space.

"Our chief mission is to supervise and conduct a nationwide electronics research program that will lead us to new concepts, components and systems needed to take us to new and bolder ventures in space and aeronautics."

The Center presently is operating in temporary headquarters at 575 Technology Square, a few hundred yards from the planned construction site. It currently has a staff of 260 and is planned to grow to 2100 scientists, engineers, and other employees. As space becomes available in the permanent buildings, equipment and personnel will be transferred. Since it was established last September, the Center has allocated more than $2.5 million in research grants and contracts to the nation's industries and educational institutions and plans to allot $5 million for this purpose in Fiscal Year 1966.

Chief of Construction for the Center is Joseph A. Vitale of Lincoln, Mass., who is Assistant Director of Facilities and Engineering at the Center. Design and construction agent for NASA is the New England Division, Army Corps of Engineers, under the supervision of Brig. Gen. Robert R. Ploger, Division Engineer, and John Leslie, Chief of the Engineering Division.

The Kendall Square site is bounded by Broadway, Third Street, Binney Street and tracks of the Boston and Albany Railroad, exclusive of property owned by the Cambridge Gas and Electric Company. It contains 29.2 acres proposed for the NASA facility.

This space-age night photo resulted when NASA sent a powerful Saturn rocket streaking from its launching pad at 2:30 in the morning last May 25. Illuminated in the rocket's white flare are the Vehicle Assembly Building (VAB) and three launch towers being built at NASA's Merritt Island Launch Area at Cape Kennedy. The night photo was a time exposure of Saturn as it boosted a Pegasus satellite into orbit.

OVERSEAS TRAVEL NOTICE

It is recommended that employees ordered to overseas travel contact the Employee Services Branch Office, telephone 2210, as far in advance of departure date as possible to arrange for immunizations and consultation regarding specific medical problems which might be encountered.

LOST: Library book "Infared Methods" by Conn and Avery. Gilliland, 3551.

LOST: 1957 VPI class ring. Hilton, 4521.

FOUND: Man's wedding band. Langley Researcher, 2575.

WANTED: Alternate driver from Stuart Gardens to W.A. on 8 shift. Harvey, 3313.

WANTED: Ride or driving combination from Riverdale Plaza Apts. to W.A. on 7 shift. Henderson, 4792.

WANTED: Ride from Denbigh area to Hilton Village at 9 a.m. weekdays. Long, 4842.

EMPLOY THE HANDICAPPED WEEK

National Employ the Physically Handicapped Week will be observed throughout the Nation during the week of October 3. Federal employment of handicapped workers reached a peacetime record last year. One out of every 50 persons hired was physically handicapped.

The NASA's policy is to give first consideration in the proper placement of physically handicapped persons on jobs where their physical disability is not a handicap. Since January the Langley Center has hired 14 handicapped persons.

Stephen P. Ryder, Director of the Civil Service Commission's Philadelphia Region, reported that 9,283 physically handicapped workers placed in Federal jobs accounted for 1.98 percent of the 468,765 persons hired by the Federal Government last year.

"This accomplishment has double significance," Ryder said. "It is the highest percentage of handicapped workers we have employed in any single year since we began keeping statistics, and it was accomplished in a tight employment market, when Federal installations were being closed and manpower ceilings were in effect."

In addition to the 9,283 physically handicapped workers appointed to Federal jobs, 361 mentally retarded workers, individually trained for specific jobs, entered the Federal work force last year.

"Our experiment in placing selected retarded workers in jobs they could perform was so successful that the program has been extended for three additional years," Ryder said.

Retarded workers were hired under 40 job titles, including laborer, messenger, clerk, mail handler, building maintenance worker, laundry worker, mail clerk, office machine operator, clerk-typist, and food service worker.

"Most of the retarded workers have been appointed to fairly simple, repetitive, lower-paid jobs, that offer limited opportunity for advancement. These are the very jobs in which retarded workers excel, and they are the jobs that employers find most difficult to keep filled," Ryder pointed out.

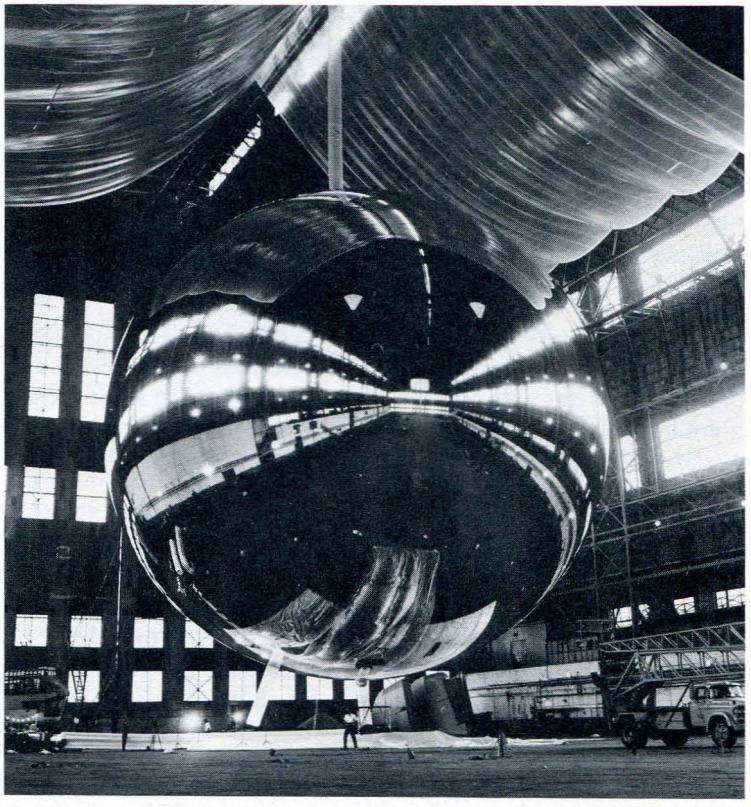
Ryder said the Government is continuing to encourage appointment of mentally restored workers, but said it was impossible to determine the number of persons hired under this program.

"Persons who have completed treatment for mental illness or emotional disorders are not always reported as handicapped under our statistical reporting system," he said. "This might indicate an improved attitude toward these people and a recognition that they are not really handicapped."

Ryder also revealed that the Government has a program for employing a limited number of severly disabled workers. The ground rules for this program have been modified recently to make employment procedures more realistic.

"During National Employ the Physically Handicapped Week all employers are urged to open doors to the handicapped," Ryder said. "We have found that it is good business to hire the handicapped. When they are placed in the right job they are productive, reliable, and efficient. They are an asset to their employer."

FOR RENT: Single room for lady. Thompson, LY 6-1177.



Inflation test of a 100-foot spherical satellite to be used in the National Geodetic Satellite Program is conducted in a hangar at Lakehurst, N.J. The satellite is nearly identical to ECHO I and will be named PAGEOS from the title Passive Geodetic Satellite. NASA intends to launch PAGEOS in 1966 into a near-polar orbit at an altitute of about 2,300 miles. As the large sphere reflects sunlight falling upon it, it will appear as a point of light in the sky. Ground camera stations will simultaneously photograph it against a star background to gather precise data for locating any point on Earth.

GRIEVANCE POLICY EXPLAINED

It is the policy of NASA that fair and prompt consideration be given to employee complaints and grievances. The types of grievances covered by NASA grievance procedure are those for which no other specific appeal procedures have been provided and, in general, these involve individual or group cases of employee dissatisfaction with working conditions or relationships.

Under this procedure, employees should attempt to settle any dissatisfaction through informal oral discussions with their supervisors. When such informal discussions do not resolve the situation to the employee's satisfaction, he may reduce the complaint to writing and present it to his immediate supervisor. If the situation is still unresolved, the employee may appeal to the Director.

For more complete information, consult your supervisor or the Personnel Office.

FOR SALE: 1964 Plymouth. Bowen, 851-1418.

FOR SALE: 9 x 12 rug pad, double size bed frame with bookcase headboard, baby furniture. Bell, 851-1188.

FOR SALE: 1965 14-foot Star Craft boat with 35 hp Mercury engine and tilt-trailer. Hobbs, 596-1886 after 5 p.m.

FOR SALE: 2-story, 4-bedroom house with attached garage in Bethel Park. Timmons, 826-3645.

SCIENTISTS ASKED TO PROPOSE SPACE FLIGHT EXPERIMENTS

A major portion of NASA's semi-annual publication inviting scientists to propose space flight experiments is devoted to Apollo manned missions, some of which are under study.

The publication, "Opportunities for Participation in Space Flight Investigations," gives 44 of its 107 pages to Apollo missions.

Detailed descriptions and timetables covering a wide range of NASA flight projects, manned and unmanned, are provided in the publication. It is prepared and distributed domestically by the NASA Office of Space Science and Applications and distributed internationally by the NASA Office of International Affairs.

Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, for 60 cents.

The opportunities include placing scientific instruments in available space on unmanned satellites and orbiting observatories, sounding rockets, balloons, the NASA Convair 990 and X-15-A2 research planes, lunar and Martian exploratory missions.

Proposals are sought for including experiments on spacecraft in such major NASA projects as Lunar Orbiter, Surveyor, Voyager, Orbiting Solar Observatory, Advanced Orbiting Solar Observatory, TIROS, Nimbus, Explorers and a joint U.S.-Canadian satellite, ISIS.

Flight dates generally cover the period from 1966 through 1972. Deadlines for proposals vary according to each project.

While the publication describes opportunities on missions planned for the near future, the scientific community is invited to also propose investigations which would require missions not presently planned and to submit design studies for future scientific investigations.

Proposals are reviewed and evaluated from the standpoint of scientific merit and technological feasibility, the competence and experience of the investigator, assurance of institutional support, and the scientific adequacy of what-apparatus is proposed.

The NASA publication describes briefly the project involved and then details the space that may be available for locating instrument packages. Dimensions, shapes, volumes, allowable weights and locations are presented in detail along with any restrictions peculiar to the spacecraft concerned. Interested scientists are given precise instructions on how to prepare and submit their proposals.

FOR SALE: 1959 Hillman, Harris, 826-2081.

FOR RENT: Furnished or unfurnished 5-room apartment. Karns, 235 LaSalle Ave., PA 2-8096.

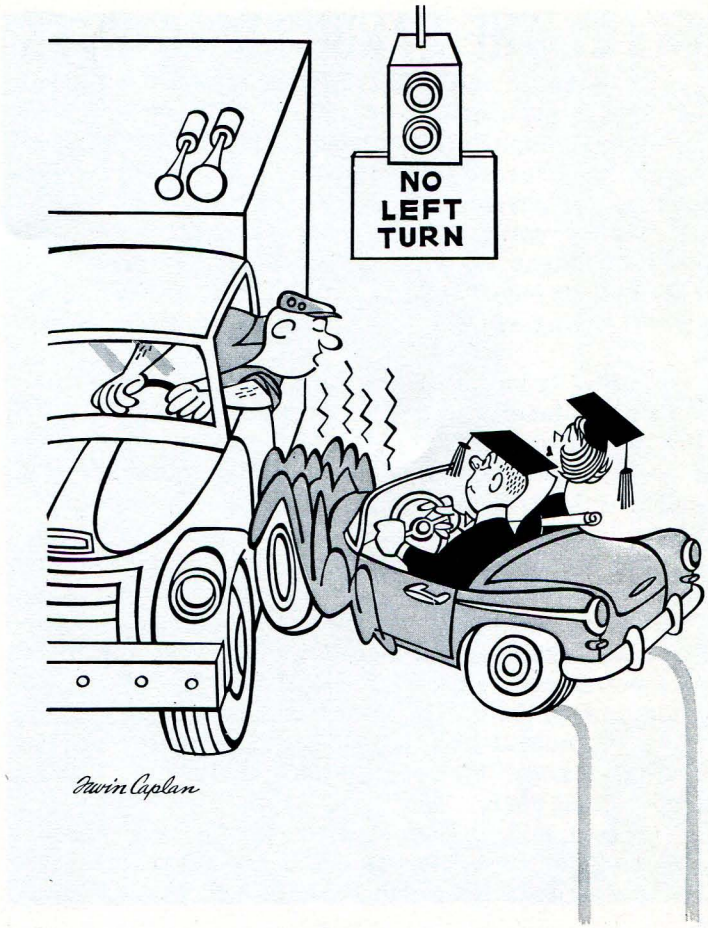
FOR SALE: 1962 30-foot Revel craft with 286 hp interceptors. Karns, 851-3377.

FOR RENT OR SALE: Furnished 6-room house. Karns, 508 Homestead Ave., 851-3377.

FOR SALE: Communications receiver - National NC109 - $95. Thomas, PA 3-7378 after 5 p.m.

WANTED: Alternate drivers from Roanoke Ave. and Whealton Rd. to W.A. on 8 shift. Hobson, 3330, or Ashe, 4753.

FOR SALE: 28-foot magnesium extension ladder, 3/8 gear pump motor driver. Decker, 247-3980.



"READING NOT REQUIRED FOR A DIPLOMA THESE DAYS?"

HELICOPTER RESCUE TECHNIQUE

A scoop attachment for helicopter rescue and recovery operations in tight places has been developed by NASA.

Employing a retractable rigid boom and net attached to the helicopter's forward section, the device is offset toward the helicopter's entrance hatch side and can be pivoted so the net can be brought to the hatch for retrieval or storage.

Use of the boom enables the pilot to keep the subject in view at all times and eliminates the necessity of a crew member's leaving the craft to help secure the object being recovered - the net scoops it up.

Developed at Manned Spacecraft Center for astronaut recovery use, the boom is made of tubular aluminum in the form of a cantilevered truss. The basket is made from plastic-covered wire net which is resistant to salt water.

The 175-pound gear is described in NASA Tech Brief 65-10229, available at 15 cents a copy from Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

FOR SALE: 6-room house with fenced backyard. Mackley, CH 4-3971.

FOR SALE: Set of deluxe permanent stainless cooking ware. Decker, 247-9380.

WANTED: Driving combination from Tide Mill Farms to E.A. on 8 shift. Houch, 2610.

WANTED: Man to share apartment at Lakeshores. Bement, 838-2996.

FOR SALE: 3-bedroom brick and frame house. Good, 851-2455.

Langley Researcher

VOLUME 4, NUMBER 19 LANGLEY RESEARCH CENTER OCTOBER 8, 1965

DR. DEFRANCE TO RETIRE FROM AMES; H. J. ALLEN NAMED NEW DIRECTOR

Dr. Smith J. DeFrance

Dr. Smith J. DeFrance, Director of the Ames Research Center and former member of the Langley Research Center staff, will retire October 15 after 45 years of service, it was announced by James E. Webb, NASA Administrator. He will be succeeded by H. Julian Allen, now Assistant Director of Ames and also a former Langley employee.

"Dr. DeFrance's leadership at Ames has brought about many engineering and scientific achievements in our country's aviation and space programs," Webb said, "and we all owe him a great debt of gratitude."

Following distinguished service as a combat pilot in France in World War I, Dr. DeFrance served for 18 years at the Langley Center. He became Director of the Ames Center when it was created in 1940. In 1947 he received the Presidential Medal of Merit for designing and building the Center.

Dr. DeFrance received the 1964 Career Service Award of the National Civil Service League, an award to the top 10 civil service employees in the Government.

He received his B.S. degree in Aeronautical Engineering from the University of Michigan in 1922. In 1953, the University awarded him the honorary degree of Doctor of Engineering. The University of California awarded him the honorary degree of Doctor of Laws in 1952.

Allen, a member of the Ames staff since 1940, is now Assistant Director for Astronautics for the Center. He is recognized as an international authority on reentry physics. He conceived a solution to the heating problem during reentry from space. A large amount of the heat produced by missiles and spacecraft as they enter the earth's atmosphere is dissipated by incorporating a blunt nose. For this work in 1957 he received the Distinguished Service Medal of the National Advisory Committee for Aeronautics, predecessor of NASA.

Allen received the Sylvanus Albert Reed Award in 1955 from the Institute of Aerospace Sciences "For contributions and leadership in solving problems in the design of supersonic airplanes and missiles, especially in the thermal problems at hypersonic speeds." He delivered the IAS Wright Brothers Lecture in 1957.

Allen was born April 1, 1910, in Maywood, Illinois. He received his B.A. degree in Engineering in 1932 and his

(Continued on page 6)

BREENE M. KERR TO ADDRESS APPRENTICE GRADUATES TODAY

Breene M. Kerr, NASA's Assistant Administrator for the Office of Technology Utilization, will be the principal speaker at the 23rd annual graduation ceremony of the NASA Apprentice School at 1:30 p.m. today on the grounds of the Activities area. In the event of rain, ceremonies will be held in the NASA Hangar.

Dr. Floyd L. Thompson, Director of the Langley Center, will introduce Kerr and preside at the ceremony.

The Reverend Walter J. Martin, Pastor of the Temple Baptist Church, Newport News, will give the invocation.

Thomas K. Lusby, who will receive a journeyman completion certificate as experimental electronic mechanic, was elected by the graduates to represent them as the class speaker.

Musical selections will be provided by the Tactical Air Command Band under the direction of CWO Eugene A. Dieter.

The Apprentice School was established at Langley in December 1941 and the first class was graduated in February 1943. This year's 64 graduates will bring to 644 the number of journeymen to receive completion certificates in the school's 24-year history.

Journeyman completion certificates are awarded jointly by NASA and the Bureau of Apprenticeship of the U.S. Department of Labor. They will be presented by S. Walter Hixon, Supervisory Employee Development Officer at the Center. Frank Penland is the Apprentice Administrator.

Pictures and the trades of the graduates are shown on Pages 3, 4, and 5.

(Continued on page 6)

STAFF SETS NEW UNITED FUND RECORD

As of press time on Wednesday, Center employees and contract employees assigned to the Langley Center had set an all-time high record in the United Fund effort by contributing or pledging a total of $66,220.87. This represented $65,173.87 from 3990 Center employees for an average contribution of $16.33 and $1,047 from contract employees. Donations by key personnel during the advanced solicitation phase of the fund drive accounted for $28,651.30 of the Center's total.

Thomas A. Harris, Chairman of the Center's drive, stated that a number of employees have not been solicited and the final total is expected to go well over the $67,000 mark.

Harris pointed out that the splendid cooperation of the staff and contract employees assigned to Langley has made this generous response possible and shown their willingness to work together for a worthwhile community endeavor.

He urged division chairmen to send in their final reports to the financial chairmen as soon as possible so the drive can be closed.

Advanced solicitation totals are shown on Page 2.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

AWARDS CEREMONY. . .The Annual Awards Ceremony will be held at the Center on Thursday, October 28 on the grounds of the Activities area. In the event of rain, the ceremony will be held in the NASA Hangar.

NEW ARRIVAL. . .Weighing in at eight pounds, two ounces on September 16 was Amy Leigh, daughter of Charles B. King, Mechanical Service Division.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on October 12 from 3 p.m. until 4 p.m. Mrs. Beverly Beale, Government-wide Service Plan representative, will be here on October 20 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Taylor, 2523, for an appointment.

ENGAGEMENT. . .A Center romance reached the engagement stage when Ann Hill, Administrative Services Division, and William T. Suit, Space Mechanics Division, announced their plans for a fall wedding.

BOATING COURSE. . .A free eight-lesson course in safe boat handling will be given to the public by the U.S. Coast Guard Auxiliary Flotilla 61 at Hampton High School. The lessons will be given each Tuesday and Thursday night from 7 to 9 o'clock, starting October 19. Students will be accepted through October 21. This course is for boat owners and non-boat owners and their families - no age limit. A certificate will be awarded upon satisfactory completion of the course. For further information call the following numbers between 6 p.m. and 8 p.m.: 826-4039, 826-4569, 723-8860, or 722-8401.

CAMERA CLUB. . .A color slide contest was held at a recent meeting of the Langley Camera Club with the following results: "Pussy Cat" by Clyde Hayes, first place; "Twilight" by Banks Holt, second place; "Ice Skater" by Abe Leiss, third place; "Jamestown" by Leiss, first honorable mention; " Can-Can," by Holt, second honorable mention; "Fishing Boats" and "Marina" by Hayes, tied for third honorable mention. The contest was judged by Sidney Hall.

FOR SALE: 1958 TR-3 hardtop with wirewheels and overdrive. Butler, 596-0014.

FOR SALE: 55 x 10 mobile home with 2 bedrooms and 1-1/2 bath. Pinson, 868-9729.

WANTED: Boy's 24-inch bicycle. Carmines, 826-2894.

UNITED FUND STANDINGS

Shown below by divisions are the total contributed or pledged to the United Fund drive during the advanced solicitation of key personnel.

Division	% of Staff Available	Total
Office of Director	100	$2,739.00
Flight Reentry Programs Office	100	385.00
Scout Project Group	100	441.00
Aero-Physics	96.8	1,727.00
Analysis and Computation	100	875.00
Applied Materials and Physics	100	2,145.00
Dynamic Loads	100	2,287.00
Flight Mechanics and Tech.	96.9	1,577.00
Full-Scale Research	100	2,090.00
Instrument Research	97.9	2,026.30
Research Reports	100	440.00
Space Mechanics	100	1,080.00
Structures Research	100	1,593.00
MORL Studies Office	100	135.00
Lunar Orbiter Project Office	100	866.00
Off. Chief, Eng. and Tech. Service	100	541.00
Electrical Systems	100	712.00
Flight Vehicles and Systems	100	1,283.00
Mechanical Service	100	2,240.00
Plant Maintenance	100	397.00
Research Models and Facilities	100	999.00
Off., Asst. Dir. for Admin.	91.7	527.00
Administrative Services	100	258.00
Fiscal	100	408.00
Personnel	100	330.00
Photographic	100	147.00
Procurement	100	403.00
TOTAL		$28,651.30

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of October 11:

Monday - Beef broth with barley, roast turkey, grilled pork chops, Polish sausage, cheese omelette.

Tuesday - French onion soup, roast beef, stuffed shrimp pork chop suey with rice or noodles, hot dog.

Wednesday - Tomato-barley soup, pepper steak, corned brisket of beef, clam croquettes, barbecued sandwich.

Thursday - Vegetable-beef soup, grilled steak, barbecued spare ribs, chicken croquettes, grilled cheese and bacon sandwich.

Friday - Clam chowder, Swiss steak, salmon-cheese loaf fried fish, chili con carne.

The menu for the week of October 18 is as follows:

Monday - Minestrone soup, braised short ribs of beef fried shrimp, stuffed cabbage, tamale pie.

Tuesday - Cream of potato soup, Spanish pot roast, breaded veal steak, liver and onions, Irish omelette.

Wednesday - Chicken rice soup, baked Virginia ham, beef stew, fried chicken, wieners and sauerkraut.

Thursday - Vegetable-beef soup, grilled steak, spaghetti and meat balls, roast pork, cheeseburger.

Friday - Clam chowder, roast beef, shrimp Newburg fried fish, deviled crab, baked hash.

FOR RENT: Furnished 3-room apartment. Soter, 722-4539.

SIXTY-FOUR LANGLEY APPRENTICES GRADUATE TODAY

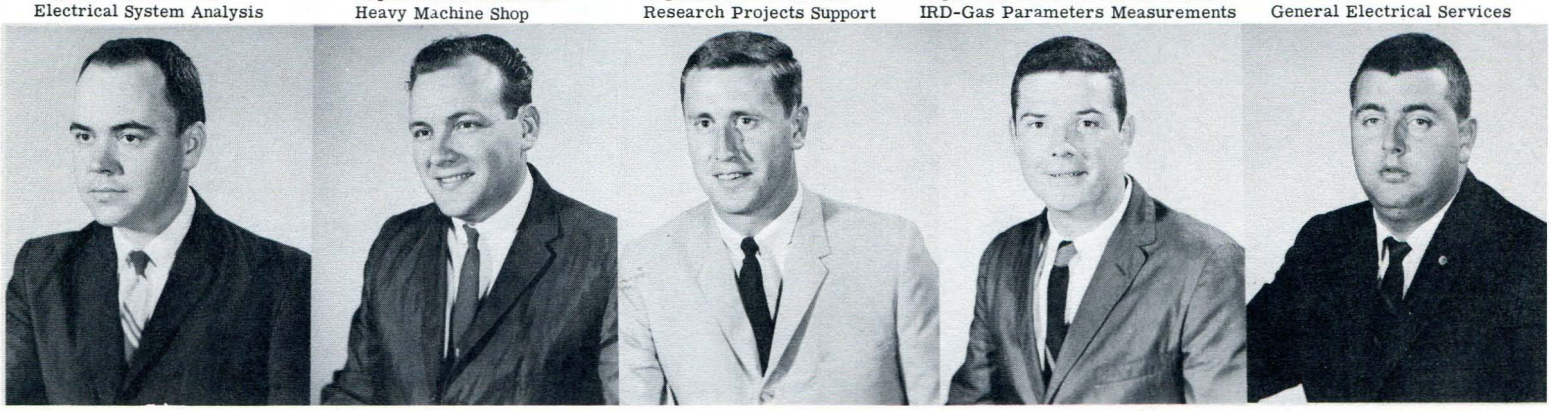
Ira H. A. Abbott
Hampton, Virginia
Engineering Draftsman
Electrical System Analysis

John D. Antinori, Jr.
Newport News, Virginia
Experimental Machinist
Heavy Machine Shop

Johnny P. Arrington
Waynesville, North Carolina
Experimental Machinist
Research Projects Support

James E. Bartlett
Hampton, Virginia
Experimental Electronics Mechanic
IRD-Gas Parameters Measurements

Robert E. Blakeslee
Yonkers, New York
Electrician
General Electrical Services



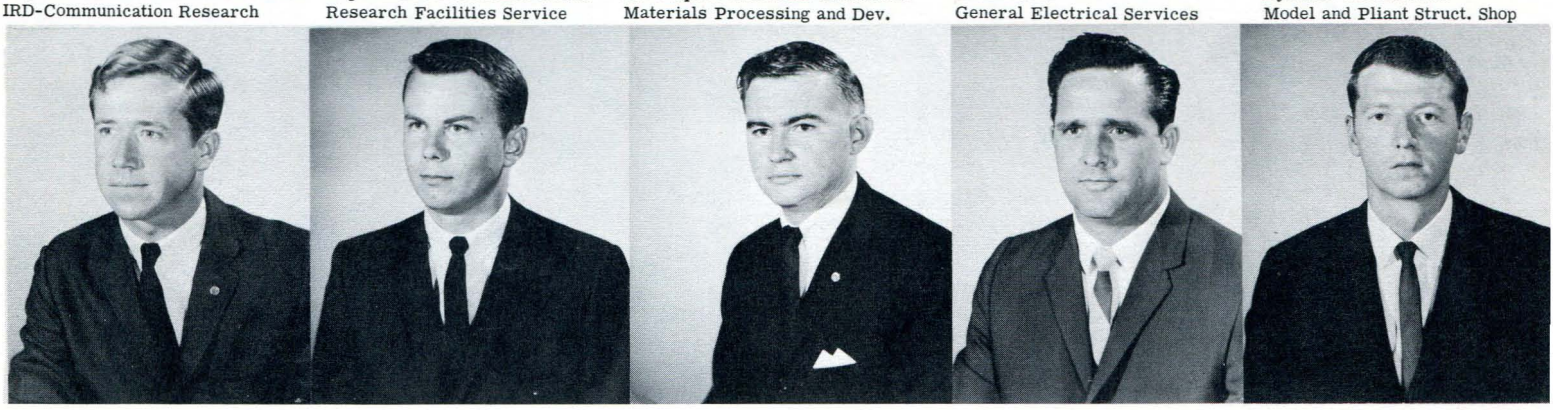
Francis O. Blount, Jr.
Newport News, Virginia
Experimental Electronics Mechanic
IRD-Communication Research

Jerry T. Bright
Alamance County, N. C.
Experimental Facilities Mech.
Research Facilities Service

Leland E. Bryant
Halfway, Missouri
Aero-Space Materials Processor
Materials Processing and Dev.

Leon V. Cole
Newport News, Virginia
Electrician
General Electrical Services

William C. Conkling
Hampton, Virginia
Dynamic Modelmaker
Model and Pliant Struct. Shop



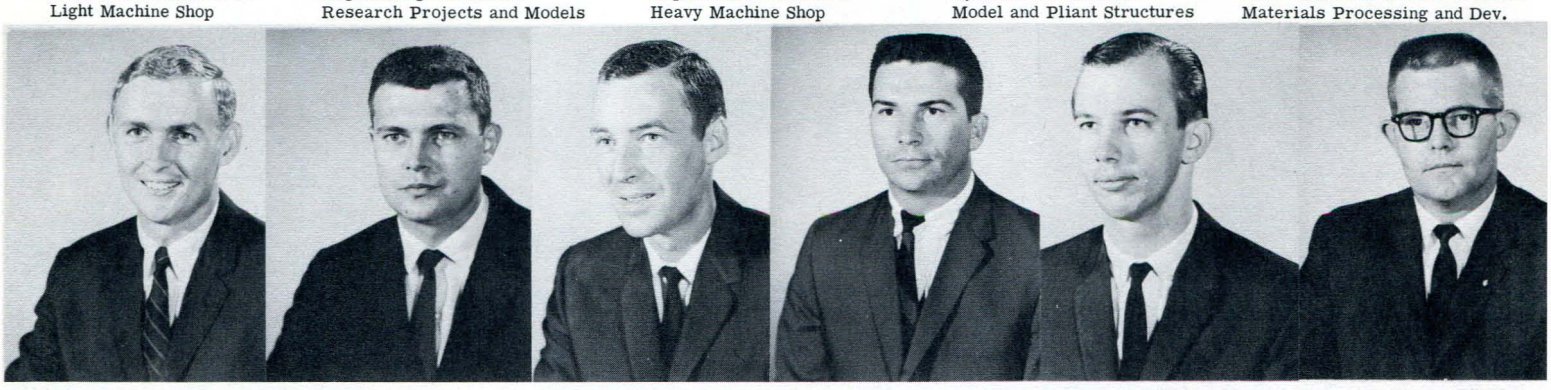
David S. Coombs
Wildwood, New Jersey
Experimental Machinist
Light Machine Shop

William H. Cordle, Jr.
Roanoke Rapids, N. C.
Engineering Draftsman
Research Projects and Models

Joseph B. Davenport, Jr.
Columbia, N. C.
Experimental Machinist
Heavy Machine Shop

Robert P. Davis
Fayetteville, N. C.
Dynamic Modelmaker
Model and Pliant Structures

George E. Dickerson
Newport News, Virginia
Aero-Space Materials Processor
Materials Processing and Dev.



Thomas G. Dudley
Sampson County, N. C.
Experimental Elect. Mech.
IRD-Force Measurements

Lawrence J. Farrow
McAdoo, Pennsylvania
Experimental Elect. Mech.
IRD-Life Support Systems

John R. Gambill
Athens, Tennessee
Experimental Elect. Mech.
ACD-Date Systems

Luther R. Gentry
Rowl, West Virginia
Engineering Draftsman
Res. Projects and Models

Charles H. Gerrity
Hampton, Virginia
Experimental Elect. Mech.
IRD-Instrument Physics Res.

James S. Harvey
Norwood, Virginia
Experimental Machinist
Environmental Testing Sup.

Larry L. Harvey
Newport News, Virginia
Experimental Elect. Mech.
IRD-Strain Measurements

Billy G. Hughes
Hampton, Virginia
Electrician
LWOP-Christopher Newport College

Addison T. Inge
Richmond, Virginia
Electrician
General Electrical Services

Artie D. Jessup
Powhatan, Virginia
Experimental Electronics Mechanic
Electronic Shop

Charles W. Knight
Louisville, Kentucky
Experimental Elect. Mech.
IRD-Thermal Measurements

Earl S. Knight
Newport News, Virginia
Experimental Machinist
Heavy Machine Shop

Clyde C. Lane
Winfall, North Carolina
Experimental Machinist
Instrument Construction Shop

Roland W. Lee
El Paso, Texas
Experimental Machinist
Research Equipment Service

Russell W. Loop
Newport News, Virginia
Experimental Elect. Mech.
IRD-Radiation Effects and Inst.

Thomas K. Lusby, Jr.
Lee Hall, Virginia
Experimental Elect. Mech.
Analog Computing and Simulation

O. Vernon Marshall, Jr.
Accomac County, Virginia
Engineering Draftsman
Spacecraft Equipment

Philip M. McElveen
Kannopolis, North Carolina
Aero-Space Materials Processor
Materials Processing and Dev.

John T. Merrill, IV
Norfolk, Virginia
Experimental Electronics Mechanic
LWOP-Old Dominion College

Daniel J. Milburn
Newport News, Virginia
Experimental Machinist
Heavy Machine Shop

Ronald C. Mills
Hampton, Virginia
Electrician
General Electrical Services

llen N. Milton
ynchburg, Virginia
lectrician
eneral Electrical Services

Archie F. Montgomery
Montgomery County, Virginia
Experimental Machinist
Light Machine Shop

James H. Neal
Durham, North Carolina
Electrician
General Electrical Services

John W. Oakley
Martinsville, Virginia
Dynamic Model Maker
Dynamic Model Shop

Roy E. Parrish
Guilford County, N.C.
Experimental Machinist
Resigned - U. of So. Calif.

Cecil G. Phillips, Jr.
Brunswick, Georgia
Experimental Elect. Mech.
IRD-Microelectronics Sec.

James S. Post, Jr.
Richmond, Virginia
Electrician
General Electrical Services

John S. Powell, Jr.
Newport News, Virginia
Dynamic Modelmaker
Model and Pliant Structures

Paul D. Prillaman
Bassett, Virginia
Experimental Machinist
Research Projects Support

Wayne W. Rohrbach
York, Pennsylvania
Experimental Electronics Mechanic
IRD-Sensor Development Section

I. Stuart Rose
Portsmouth, Virginia
Experimental Machinist
Light Machine Shop

'rederick J. Rosensteel
bensburg, Pennsylvania
xperimental Electronics Mechanic
RD-Vehicle Instrumentation

Frank J. Shemenski, Jr.
Newport News, Virginia
Experimental Machinist
Resigned-Old Dominion College

James M. Shipp
Appalachia, Virginia
Experimental Machinist
Instrument Construction Shop

Donald B. Shortt
Jerome, Pennsylvania
Electrician
General Electrical Services

James G. Smith
Waynesboro, Virginia
Experimental Electronics Mechan
IRD-Field Instrument Unit

'arner W. Smith, Jr.
orthampton County, Virginia
lectrician
eneral Electrical Services

Charles M. Southall, III
Hampton, Virginia
Electrician
General Electrical Services

Francis D. Stone
Elizabeth City County, Va.
Electrician
General Electrical Services

Frank H. Supplee, Jr.
North Kingsville, Ohio
Experimental Elect. Mech.
IRD-Telemeter Inst.

Larry W. Swartz
Lithia, Virginia
Engineering Draftsman
Electrical Flight Systems

Charles A. Sweet
Rockbridge County, Virgini
Electrician
General Electrical Services

DR. DEFRANCE TO RETIRE FROM AMES

(Continued from page 1)

B.S. degree in Aeronautical Engineering in 1935 from Stanford University. He worked briefly for the Shell Chemical Company in California before joining the Langley Center as an aeronautical engineer in 1936. In 1940 he was transferred to Ames. In 1959 he was promoted to Assistant Director.

John F. Parsons, Associate Director of Ames, remains in this post. He joined the Langley staff in 1931 and was one of the earliest members assigned to the Ames staff in 1940. He specialized in wind-tunnel design and construction and became Dr. DeFrance's main assistant in establishing and managing the Center.

Among the Ames Center's pioneering achievements were variable stability control systems for study of handling qualities of airplanes in flight; ground-based flight simulators for subsonic and supersonic aircraft and for spacecraft; control and guidance of manned spacecraft reentry into earth and planetary atmospheres; and aerodynamic and propulsion design data on V/STOL aircraft.

Ames also has pioneered in the development of extremely high-speed research tools, including shock tubes and light gas guns.

Since the creation of NASA, Ames has become the agency's chief center for life sciences research programs in aeronautics and space. In the study of chemical evolution of life, Ames exobiologists have synthesized ATP and the nucleotides of the major components of RNA and DNA (the chemical building blocks of living cells.)

The Center has a staff of about 2200 scientists, engineers and technicians and other employees. It has a plant value of about $175 million.

APPRENTICE GRADUATION

(Continued from page 1)

Kerr was born January 27, 1929, at Ada, Oklahoma, son of the late Senator Robert S.Kerr. He received his Bachelor of Science degree from Massachusetts Institute of Technology in 1951.

Kerr is the Assistant Administrator for the Office of Technology Utilization, NASA, with the responsibility of disseminating to industrial and other users scientific data and technical advances from NASA research. This is to help improve or form a basis for new techniques, processes or products and extend them for non-space use.

Kerr also has operating responsibility for the Scientific and Technical Information Division which furnishes the basic technology information support for NASA and NASA contractors as well as documenting the results of work by NASA and its contractors in aerospace research and development.

Prior to his present appointment on November 22, 1964, Kerr was the Deputy Assistant Administrator for Technology Utilization.

FOR SALE: New 20-gauge Winchester automatic, 3-shot, 26-inch improved cylinder. Hixon, PA 2-4131.

FOR SALE: 12-gauge Winchester automatic shotgun, 30-inch barrel, full choke. Biermann, 596-4196.

FOR SALE: 7-room split-level house in York County - $21,500. Richardson, 898-3692.

KNOW YOUR CREDIT UNION

Good news! A revised Cash Received Voucher was put in use early this month. Designed with your convenience in mind, it will be easy to complete quickly and accurately. However, you must give it a chance. Just because it is larger and some boxes have been rearranged, don't throw up your hands. Look at it and then read the headings and instructions with an open mind. Do that once and from then on there is nothing to it.

Once used to the idea, we think you will like the change. The two-sheet sets of NCR action paper eliminate the need for carbon or the chance of error if vouchers are filled-in separately. The instructions encourage proper preparation by reminding you of your responsibilities (no one else knows for sure the item you want credited) and by indicating exactly what goes where. The proper account number is emphasized so that a car loan payment will get the "X" needed to identify it. And, finally, for your convenience - as well as that of the tellers - the duplicate voucher is color coded.

J. H. BURRELL DIES AT AGE 46

James H. Burrell, Materials Processing and Development Section, Mechanical Service Division, died Saturday in Dixie Hospital.

Burrell was born October 3, 1919 in Hampton and attended local schools. He joined the Center staff on October 8, 1941. He entered the services of the U.S. Army in May 1942 and returned to the Center following his discharge in November 1945.

Surviving are his wife, Mrs. Carrie Burrell; his father, William H. Burrell of Hampton, three brothers and two sisters.

AIAA SECTION PLANS MEETING

Raymond G. Zedekar, Preflight Training Assistant at Manned Spacecraft Center, will be guest speaker at a meet- of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics on October 13 at the Holiday Inn on Mercury Boulevard.

Zedekar will speak on "Preparation for the Moon." He will discuss the various phases of training the astronauts undergo and will point out some of the problems encountered in the program and their solutions. He will also discuss the results of some of the previous training missions and the training designed to ready the astronauts and other crew members for the lunar mission.

A native of South Haven, Michigan, Zedekar graduated from Hampton High School and received his B.S. degree in Mechanical Engineering from the University of Virginia. He joined the Langley Center staff in 1955 but was called into the Air Force in 1956. Following his discharge in 1958, he joined the Space Task Group.

The meeting will be preceded by a social hour at 6 p.m., followed by dinner at 7 and the meeting at 8. Reservations may be made by calling L. W. Enderson, 596-6702; Robert Keynton, 826-5549, or Charles Tynan, 877-2642.

FOR RENT OR SALE: 3-bedroom unfurnished country home. Weidman, 868-9380.

FOR SALE: Electric organ - $150. Dibble, LY 6-3684.

FOR SALE: B-flat clarinet - $55. Ross, LY 6-9562.

FOR SALE: 1956 Ford - $175. Berry, 898-6169.

GEMINI 6 LAUNCH SCHEDULED

NASA has announced that Gemini 6 will be launched on a two-day mission from Cape Kennedy no earlier than October 25. It will be man's first attempt to rendezvous and dock with an orbiting space vehicle.

Pilots for Gemini 6 are Astronauts Walter M. Schirra and Thomas P. Stafford. Backup pilots are Astronauts Virgil I. Grissom and John W. Young. This will be Schirra's second space flight. His first was October 3, 1962, aboard Mercury spacecraft Sigma 7.

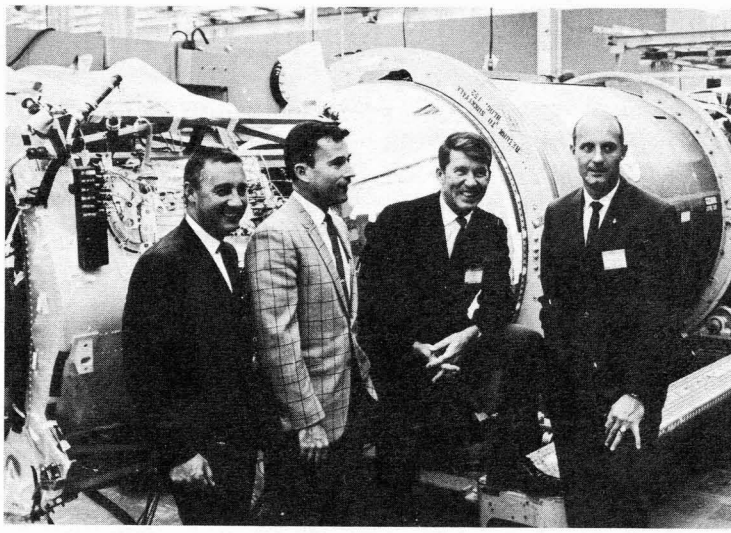
Prime objective of Gemini 6 is to prove out the ability of Gemini to rendezvous and dock with an orbiting Agena vehicle. Secondary objectives of the flight include evaluating maneuverability of the two undocked vehicles.

Two launches are required for the mission, the Gemini-Titan and an Atlas-Agena. Both launch vehicles will be counted down simultaneously to about T-101 minutes for Gemini. At this time the Atlas will be launched to place the Agena into circular orbit of about 185 miles.

Following successful launches of both vehicles, the first opportunity for the Gemini launch will be one revolution or approximately 101 minutes after the Atlas Agena launch.

When the Agena has attained its proper orbit, Gemini 6 will be launched into an orbit of about 100 miles perigee and 168 miles apogee. During the first three revolutions of Gemini 6 the astronauts will maneuver their spacecraft into a circular orbit of about 168 miles, approximately 17 miles below the Agena.

On the fourth revolution, as the Gemini spacecraft passes over the Atlantic Ocean, the astronauts will begin terminal rendezvous maneuvers for a planned docking with the Agena between Australia and Hawaii.



The crew and backup crew for the first rendezvous and docking in space with another vehicle are shown with the Gemini Agena Target undergoing tests at Lockheed Missiles and Space Company, Sunnyvale, Calif. Walter M. Schirra (second from right) and Thomas P. Stafford (right) will be command pilot and pilot for NASA's Gemini 6 mission. On the left are Virgil I. Grissom and John W. Young, the backup command pilot and pilot. They were photographed during a recent visit to Lockheed where they inspected this Agena which two of them will meet again some 160 miles above the earth.

Eileen Langan, Lockheed Missiles and Space Company, shows how the Gemini 6 spacecraft and the Agena Target Vehicle will join in space. In her right hand is a model of the spacecraft which will be piloted by Walter M. Schirra and Thomas P. Stafford, and in her left she holds a model of the Agena Target. The spacecraft will approach and dock with the Lockheed Agena while both vehicles are orbiting the earth.

Only attitude maneuvers or translation maneuvers using the Gemini Orbital Attitude and Maneuvering System (OAMS) will be attempted while the two spacecraft are docked.

It is planned to dock and separate the spacecraft several times to provide experience with docking procedures. Each astronaut will practice docking under day and night lighting conditions. Following final separation the astronauts will use the spacecraft radar to transmit commands to the Agena to gather additional data on Agena visibility at different altitudes and distances.

About 10 hours of flight time have been planned for rendezvous and docking activities. However, based on experience gained in previous flights, the Gemini 6 flight plan will be flexible to provide whatever time is needed to accomplish these activities.

Scientific and medical experiments for Gemini 6 are presently under consideration.

Total flight time for Gemini 6 will be about 46 hours and 47 minutes from liftoff to landing. Landing is planned in the Atlantic Ocean about 330 miles south of Bermuda.

Following recovery of the astronauts, ground commands will be used to perform various Agena exercises. These are to test Agena command and control, useful lifetime and maneuver capability.

Gemini 6 marks the halfway point of Project Gemini. Of the remaining six flights, five will be rendezvous missions and one, Gemini 7, will be a long duration flight lasting up to 14 days.

FOR SALE: 3-bedroom home near Langley. Allen, 851-2988.
FOR SALE: World's Fair tickets for adults. Halsey, LY - 50514.

RETIREMENT ACT AMENDED

On September 27 President Johnson signed into law an amendment to the Civil Service Retirement Act which provides for increases in Civil Service Retirement annuities to persons already retired and to employees who retire on or before November 30, 1965, with annuities which commence on or before December 1, 1965.

This new law is of urgent, immediate concern to employees who are eligible to retire on immediate annuity on or before November 30. The annuity of an employee who remains in pay status after November 30, so that his annuity must commence after December 1, cannot qualify for the increase.

Annuities of employees who retire on or before November 30 are increased by 6.1 percent, effective December 1, under the new amendment. These employees are also entitled to the 2 percent increase payable under the 1962 legislation.

Some applicants whose disability retirement is approved by the Civil Service Commisson and who have sufficient leave (sick and/or annual leave which cannot be included in the lump-sum leave payment) to carry them in pay status beyond November 30, should be given the opportunity to decide between--

1. Forfeiting all or a portion of such leave in order that their pay may cease on November 30, and
2. Continuing in pay status until such leave expires.

If pay ceases November 30, annuity will begin December 1, and the retiring employee will have the advantage of the new annuity increase. If he is paid for leave beyond November 30 (other than lump-sum leave payment), his annuity must commence after December 1 and he cannot have the new annuity increase.

A bill has been introduced into Congress to extend the retirement deadline to December 30, 1965. Further details concerning the amendment will be published in the next issue of Langley Researcher.

WANTED: Ride from Riverdrive Apartments to W.A. on 8 shift. Hogge, 4487.

WANTED: Driving combination from Belleview Terrace to W.A. on 7:25 shift. Wagner, 4572.

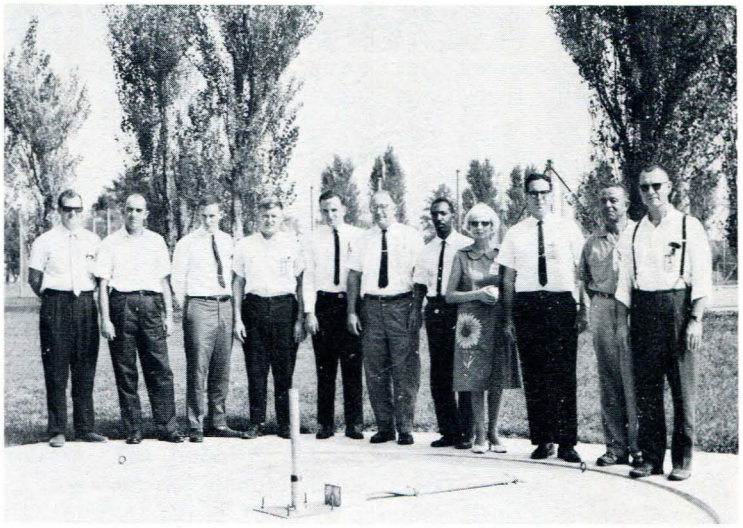
WANTED: Ride from 49 E. Tyler St., Hampton, to W.A. on 8 shift. Crawley, 4730.

SAFETY NOTICE

Recent safety inspections conducted at the Center have revealed an increasing number of empty soft bottles scattered throughout facilities. These bottles are placed on window sills, filing cabinets, desks, work benches, and in hallways. They constitute a serious safety hazard and create an unsightly appearance in a business office or shop.

Containers have been placed in each facility where vending machines are located and the extra minute taken to return empty soft drink bottles to these containers may well serve to prevent a serious accident.

All staff members should take pride in the buildings in which they work and cooperate in presenting the best appearance possible to fellow workers and visitors.



The above picture of members of the Skywatchers Astronomy Club was taken at a recent meeting of the organization. Shown in the group are (from left): Donald R. McFarland, Maxwell F. McNear, treasurer; Tom D. Finley, W. R. Young, Dennis Carey, Wilbur H. Gaskins, vice-president; Clarence O. Jones, Gertrude Westrick, Leonard M. Weinstein, president; Edward F. Taylor Jr., secretary, and E. E. Davenport.

INSURANCE DEADLINE TODAY

In line with its continuing policy of assisting employees of NASA to provide for their security and protection by making available low-cost group insurance, the NASA Employees Benefit Association has under consideration proposals for a new Travel Accident plan providing coverages for both personal as well as business travel, and to make available a new form of coverage designed to provide low-cost insurance for dependents of employees. Details of the coverage and benefits of these plans have been sent to each employee.

If sufficient interest is shown on the part of employees in the proposed Travel Accident plan, that part of the plan will be effective November 1. Employees interested in the Travel Accident plan are urged to complete the enrollment form and return it today to the Employee Services Branch Office, Mail Stop 305.

If the plan is made effective, employees who have enrolled will be billed at that time. When the new Travel Accident plan becomes effective, the old plan will be terminated. Those insured under the old plan must complete an enrollment card for the new plan or their coverage will cease.

Insofar as the Dependent Life insurance plan is concerned, a survey is being made to determine employee interest. If there is sufficient interest, this plan will probably become effective sometime during the first half of calendar year 1966. In order to enable the Board to assess the interest of employees in this plan, a brief questionnaire has been developed and sent to staff members. All employees are requested to complete the questionnaire and return it to Employee Services Branch Office, Mail Stop 305.

WANTED: Driving combination from Denbigh-Stoneybrook area to W.A. on 7:30 shift. Averill, 3265.

WANTED: Alternate drivers from Norfolk to W.A. on 7:30 shift. Hall, 4691.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 4, NUMBER 20 LANGLEY RESEARCH CENTER OCTOBER 22, 1965

LANGLEY SELECTS TWO CONTRACTORS FOR TWO-GAS SENSOR SYSTEM STUDIES

NASA has selected two firms with which it will negotiate contracts for design studies of an instrument capable of analyzing and controlling a two-gas atmosphere system for future manned spacecraft.

The two companies are Consolidated Systems Corporation, Pomona, California, and Perkin-Elmer Corporation, Electro-Optical Division, Norwalk, Connecticut.

Contracts will be negotiated and monitored by the Langley Research Center under the programs of the Biotechnology and Human Research Division of the agency's Office of Advanced Research and Technology.

Manned spacecraft flown to date have used a single gas system - oxygen - for their crews. Longer missions, lasting 45 days or more, may require a two-gas system composed of oxygen and another gas such as nitrogen, helium or other inert gas, to assure the health and safety of crew members.

Mechanical devices for storing and mixing oxygen and nitrogen into a two-gas atmosphere now exist, but there is no instrument capable of flight application which can measure with accuracy the components of the mixed gas and provide atmosphere control information.

The two selected companies will undertake a four-month study of existing sensors for measuring the partial pressures of oxygen, nitrogen, carbon dioxide and water vapor, all of which will be present in a two-gas spacecraft cabin. The instrument they devise must be capable of operating for periods up to 120 days.

Each contract will be valued at approximately $60,000.

At the conclusion of the two studies, NASA will make a comparative evaluation of the concepts developed by the contractors. The agency may then award a second phase contract which would lead to construction of one or more prototype atmosphere sensor systems.

Langley Center is managing the studies as part of its responsibility for developing technology which will be needed for future missions in space which the United States may wish to undertake.

AWARDS CEREMONY OCT. 28

Langley Center's annual awards ceremony is scheduled for October 28 at 1:30 p.m. The function will be held outdoors adjacent to the Activities Building. In the event of inclement weather the ceremony will be conducted in the NASA Hangar.

Earl D. Hilburn, NASA Deputy Associate Administrator, will be guest speaker and will participate in the presentation of awards.

Retired employees will be honored at a luncheon before the ceremony and given a tour of some of the Center's newer facilities following the presentation of awards.

Forty, 30, and 20 year service emblems and certificates and other awards will be presented at the function.

THREE NASA SCIENTISTS CITED FOR AERONAUTIC CONTRIBUTIONS

Three scientists at the Langley Research Center were recently presented the Wright Brothers Medal for 1964 at a meeting of the Society of Automotive Engineers in Los Angeles.

They include Marion O. McKinney Jr., Richard E. Kuhn, and John P. Reeder, who were cited by the SAE "for meritorious contribution to aeronautical engineering."

Their specific contribution was a paper they presented in April 1964 in New York at the Society of Automotive Engineers-American Society of Mechanical Engineers aeronautic meeting.

The paper, "Aerodynamics and Flying Qualities of Jet/Vertical Takeoff-Landing and Short Takeoff-Landing Airplanes," was selected as the best presented at any SAE meeting during 1964 on the subject of aeronautics.

McKinney is head of the Dynamic Stability Branch of the Flight Mechanics and Technology Division. He is a native of Chattanooga, Tennessee, and received a B.S. degree in Engineering from Georgia Tech before joining the Langley staff in 1942.

Kuhn, head of the Powered-Lift Aerodynamics Section of the Full-Scale Research Division, was born in Trenton, Illinois. He received a B.S. degree in Aerospace Engineering from Parks Air College, St. Louis, Missouri, before coming to Langley in 1943.

Reeder, born in Houghton, Michigan, and an Aeronautical Engineering graduate of the University of Michigan, has been at Langley since 1938. A veteran research pilot, he serves as head of Langley's Flight Operations Branch and as Assistant Chief of the Flight Mechanics and Technology division.

Two employees recently received a cash award for a suggestion that might result in the granting of a patent. Henry A. Wilson (left), Chief of Applied Materials and Physics Division, presents a check for $500 to Ralph W. Will and Peter R. Kurzhals for their suggestion entitled "Attitude Control and Damping System for Spacecraft."

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, Building 587, telephone 2575

Editor.....Ruth Angel Verell
Staff Photographer..... Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEW ARRIVALS. . .Word has been received at the Center that Barbara Evans, formerly of Public Affairs Office, became the mother of twins on October 4. The son, Mark Stanley, weighed six pounds, four ounces and the daughter, Lisa Ann, weighed four pounds, thirteen ounces. . .Announcing the birth of an eight pound, two ounce son, Steve William, on September 30 is George W. Ivey, Flight Vehicles and Systems Division. . .Weighing in at seven pounds, five ounces on September 18 was Mary Ellen, daughter of Richard A. Langhans, Full-Scale Research Division. . . Announcing the birth of a son, Jeffrey, on October 13 is Huey D. Carden, Dynamic Loads Division.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, November 2 at 7 p.m. at the Central Labor Union Hall, Newport News.

PAY DAY GAME NIGHT. . .The Pay Day Game Night's new opening will be delayed until December 2. Due to the extent of repairs and new construction to the Activities Building, Pay Day Game Night originally scheduled to reopen on November 4 will be postponed until December 2.

CIGARETTE LIGHTERS. . .Remember the early days of air travel when fountain pens spewed ink all over your purse or shirt at high altitude? Most of this problem has been corrected by the fountain pen manufacturers. However, a similar problem now exists with cigarette lighters - the type that has a visible extra fuel supply. This type lighter will release extra fluid during flight which can lead to several undesirable situations. There have been some improvements made on newer models of this type lighter with specific instructions for air travel. These instructions should be followed. Earlier models are not suitable for air travel.

FOR SALE: 3-bedroom, 2-bath house. Landree, 22 Brooklane Rd., York County, 877-0943.
FOR SALE: 66-gallon G.E. water heater with calrod units. Hogge, 624-2006.
FOR SALE: Sears President portable typewriter with case, made by Smith-Corona. Carter, 838-3373.
FOR SALE: 3/4-acre wooded lot at Queens Lake. Overman, 595-0935.
FOR SALE: 1964 26-foot Chris Craft cabin cruiser with ADF receiver, depth sounder, mufflers, fighting chair. May be seen at Slip 43, Langley Marina. Kidd, 764-3252.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of October 25:

Monday - Cream of tomato soup, roast veal with dressing, braised beef tips on rice, clam croquettes, Spanish omelette.

Tuesday - Puree of bean soup, pepper steak, baked stuffed pork chop, fried fish sticks, Austrian ravioli.

Wednesday - Green split pea soup, roast turkey with dressing, chopped steak, smoked pork sausage with apple sauce, tuna-noodle casserole.

Thursday - Vegetable-beef soup, roast ribs of beef, barbecued pork chunks over noodles, stuffed flounder, hamburger.

Friday - Clam chowder, smoked pork chops, meat pot pie, broiled fish, fish sandwich.

The menu for the week of November 1 is as follows:

Monday - Beef broth with barley, Spanish pot roast, shrimp gumbo, roast pork, hot dog.

Tuesday - Chicken-rice soup, fried oysters, chicken and dumplings, Polish sausage, baked hash.

Wednesday - French onion soup, barbecued spare ribs, baked lasagna, liver and onions, chili con carne.

Thursday - Vegetable-beef soup, grilled steak, baked ham, fried chicken, barbecued sandwich.

Friday - Clam chowder, hot roast beef sandwich, stuffed shrimp, broiled fish, franks and beans.

NOTICE: Will the person who borrowed three volumes on "Logic" by Rider please call E. L. Ahl, 3551.
WANTED: Boy's 20-inch bicycle. Llaneza, PA 3-5264.
FOR SALE: 1963 Chevy II. Hutcherson, 826-1071.
FOR RENT: Furnished or unfurnished 4-bedroom house. Hogge, 868-2311.

Six employees recently received cash awards for suggestions under the NASA Incentive Awards Program. Top left photograph - Edward A. Howe, Chief of Fiscal Division, presents a check to Norma M. Evans for her suggestion concerning application and account for advance funds (travel advances). Top right photograph - William B. Mayo (left), Chief of Mechanical Service Division, congratulates Jesse L. Kent for his award concerning breathing quality air supply and service. Center left photograph - John L. Hudson (right), Assistant Chief of Research Models and Facilities Division, presents a check to Vinton T. Land for his suggestion concerning an affadavit of jury service performed by NASA employees. Center right photograph - Richard H. Sawyer (right) receives his award from Philip Donely, Chief of Flight Mechanics and Technology Division. Sawyer's suggestion concerned application for cost reduction slogan and symbol. Lower left photograph - David P. Whittaker (right) receives a check from Joseph Getsug, Chief of Electrical Systems Division. Whittaker suggested a one-fourth hole saw mandrel drill bit. Lower right photograph - Samuel S. Westbrook (right) receives his check and congratulations from R. G. English, Deputy Head of the Scout Project Office. Westbrook's suggestion concerned the use of a mail cart.

Edward T. Maher, Center Records Management Officer, announced this week the success of OPERATION CLEAN-UP and expressed his appreciation to all those individuals whose efforts made it so. During the past three months, more than 25 percent of the total records holdings of the Langley Center have been disposed of or transferred to less costly storage at a GSA Records Center. Maher expressed the hope that the experience gained through OPERATION CLEAN-UP will serve to insure the continuance of an affirmative approach to records management in the future. Supervisors are reminded that good records management is simply a part of good business management. The extension of the Presidential moratorium on the purchase of new filing equipment makes the need for a good records management program a must.

FOR RENT: 2-bedroom house convenient to Langley and Buckroe, stove and refrigerator furnished. Beamon, PA 3-3139.

CREDIT UNION NOTICE

As a part of an audit of the Langley Federal Credit Union as of September 30, the Supervisory Committee has mailed statements of account to all members. Members who did not receive statements are requested to notify the Supervisory Committee, P.O. Box 607, Langley Air Force Base, Virginia 23365, or call Arthur W. Carter, NASA extension 4479; Joseph B. Struhar, 4686, or Emanuel Boxer, 4581. Members are requested to check their records and report any errors to the post office box or one of the above listed committee members.

NASA BOWLING LEAGUE

In the NASA Tenpin League the Hampton Scientific Corp. leads Group A with 17 wins and 3 losses. High scores for the week were rolled by Hank Fedziuk with a 228 game and Glen McKenzie with a 597 game.

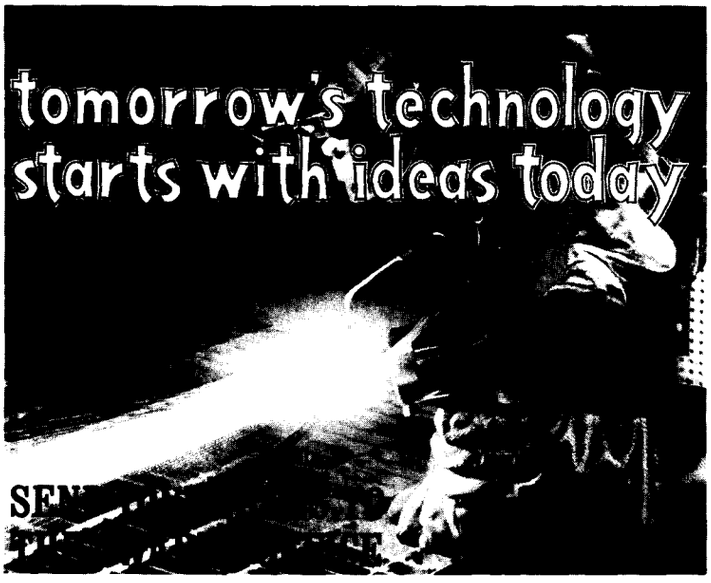
Strikeouts lead Group B with 16 wins and 4 losses. Top bowlers were Donald Progar with a 228 game and Gene Moen with a 552 set.

ACD and HMS are tied for first place in Group C with 17 wins and 3 losses each. Top scorers were John Allred with a 234 game, Herman Schuchert with a 615 set, Lois Moore with a 210 game, and Edith Moen with a 210 game and 571 set.

GROUP A					
Hampton	17	3	Phantoms	8	12
Flyers	14	6	Odd Balls	7	13
Alley Cats	13	7	Mexicali	6	14
Filter Queen	13	7	Short Circuits	6	14
Hornets	10	10	Unitary	6	14
GROUP B			GROUP C		
Strikeouts	16	4	ACD	17	3
Cee Pees	14	6	HMS	17	3
West Gate Grill	13	7	Greenhorns	15	5
Flight Eng.	12	8	RPM's	15	5
Question Marks	12	8	Mets	14	6
Southeastern	11	9	Dillys	12	8
Flight	10	10	Trackers	10	10
A-OK's	10	10	Latecomers	9	11
Misfits	9	11	Gliders	8	12
Hampton	9	11	C-Scouts	6	14
Galaxies	8	12	Chargers	5	15
Analogs	7	13	Bowling Belles	4	16
Payloads	7	13	Hit and Misses	4	16
Pinwigglers	2	18	Sparkys	4	16

Light Machine Shop I leads the NASA Duckpin League with 16 wins and 8 losses. Tigers are close behind with 15 wins and 9 losses. Top scores were rolled by John Dupere with a 159 game and 407 set, Mary Carmines with a 119 game, and Mary Lou Wood with a 324 set.

Light Mach.I	16	8	Light Mach. II	13	11
Tigers	15	9	Ten Spots	9	15
Bloopers	13	11	Rebel Bombers	6	18



KNOW YOUR CREDIT UNION

The Board of Directors is pleased to announce a change in share-life insurance coverage that will not reduce that of any member and will increase that of most. This change is in line with the thinking of the membership as expressed at the last annual meeting and has been proved feasible by three years of insurance experience.

Under the old system, coverage began to decrease at age 55 and stopped entirely at age 70. Under the current program, effective October 1, 1965, coverage depends on age at time of deposit. Age at date of death does not affect the amount involved provided the insured is over six months old. Under either method, of course, the maximum amount of shares that is matched with life insurance is $2,000.

All shares purchased before the age of 55 provide 100 percent coverage up to the maximum of $2,000 for as long as they are held. The insured member has, at least, this coverage regardless of whether he dies at 56 or 86. After 55 the formula becomes more complicated. The member continues to enjoy full coverage on shares held before age 55 up to $2,000, but if the amount is less a restriction enters in. He may, before 60, only increase his coverage by an amount equal to 3/4 of shares purchased up to a maximum of 3/4 of the difference between shares held before age 55 and $2,000. For example, a member has $1,000 in shares on reaching age 55, at age 58 he puts in $2,000. Only 3/4 of this amount ($1,500) counts toward insurance but even that is too much as the maximum additional coverage he can acquire is $750 ($2000 - $1000 X 3/4). His coverage is $1,750 maximum.

The system works the same at age 60 except the fractions drop from 3/4 to 1/2; at 65 from 1/2 to 1/4 and at 70 from 1/4 to 0. No credit is received for shares purchased after age 70 but credit continues on shares bought before that age as long as they are held. The advantages of the new program to members is obvious. It is suggested that all review their coverage to determine if the proper individual is insured. In past instances husbands, as they approached the former cut-off of 70, shifted shares with the associated life insurance to their wives' accounts. The question now is whether or not the reasoning behind such action is still valid. Better check.

TOUCH FOOTBALL LEAGUE

Recent scores in the NASA Touch Football League were as follows:

Boozers 25 - Packers 0, Sixty-Niners 19 - Bombers 6, IRD 45 - Redskins 6, KNADS 13 - IRD 6, Bombers 19 - Packers 12, Boozers 38 - Redskins 0, IRD 13 - Boozers 13, KNADS 25 - Sixty-Niners 8, Bombers 48 - Redskins 0, IRD 33 - Packers 13, Boozers 18 - Sixty-Niners 13, KNADS 38 - Redskins 0.

STANDINGS

Team	W	L	T
KNADS	5	0	0
Bombers	4	1	0
Boozers	3	2	1
IRD	2	2	1
Sixty-Niners	2	3	0
Packers	1	4	0
Redskins	0	5	0

WANTED: Ride from Denbigh area to Hilton Village on week-days at 8:30 a.m. Long 4842.

ENGINEERS CLUB MEETS OCT. 28

Frank C. DiLuzio

Frank C. DiLuzio, Director, Office of Saline Water, United States Department of the Interior, will be guest speaker at the meeting of the Engineers Club of the Virginia Peninsula on October 28 at 8 p.m. at Thomas Eaton Junior High School.

DiLuzio will speak on "Desalting of Water." This important subject is receiving increased attention. He will present the latest information as to the processes that are available, the economics involved, and the impact of such techniques on future generations in man's never ending quest for clear, cool, water.

DiLuzio came to his present position with an extensive background as a research director and engineer in industry and government. He began his government career in the Bureau of Reclamation and from there went to the Corps of Engineers. During World War II he served in the Manhattan project and later became deputy manager of the Albuquerque office of the AEC. In 1961 he turned to private industry and became vice-president and director of the Hydraulic and Special Projects Division of Fairbanks, Morse and Company, before returning to the government.

He attended Fenn College in Cleveland and Harvard School of Business Administration. He is a member of the International Association for Hydraulic Research, the National Society of Professional Engineers, the American Geophysicial Union of the National Academy of Sciences, and the National Rivers and Harbors Congress.

A dutch treat dinner will be served at the Ranch House Corral Restaurant at 6:30 p.m. The social period will precede the dinner. Reservations for the dinner should be made by October 27 with F. W. Schmidt, CH 5-1714, A. W. Robins, TW 8-5485, or J. E. Robins, 723-0385.

TURKEY SHOOT NOVEMBER 5

The Activities Association's Annual Thanksgiving Turkey Shoot will be held on Saturday, November 5 at the Activities Building.

Matches will start at 9 a.m. and continue until 5 p.m. The winner of each match will receive a turkey. No admission will be charged other than 50 cents for each shot.

Firearms will be furnished by the Activities Association or contestants may use their own. The Association will supply 12, 16, and 20-gauge shotgun shells for the shoot. The maximum charge of powder and minimum size of shot should not exceed 3-3/4 drams for powder and number 8 for shot.

The shoot will be supervised by Harold Crate and any ammunition brought to the match must be turned over to the person in charge of ammunition.

In the interest of safety, all contestants are requested to keep the actions of their firearms opened while on the grounds of the Activities area except when on the firing line.

Lunch may be purchased at the bar in the Activities Building.

SIGNAL ENDS DATA FROM MARINER IV

Continuous data reports by radio from Mariner IV ended October 1 when the NASA spacecraft received its 85th command from Earth.

The command, designated DC-12 (for Direct Command No. 12), switched Mariner's transmitter from a high-gain directional antenna to a low-gain all-direction antenna so that the spacecraft can be tracked periodically as it orbits the Sun.

It is not possible to receive data across the present Earth-spacecraft distance - approximately 191 million miles - using low-gain antenna.

Since launch on November 28, 1964, Mariner IV has logged 307 days and 418 million miles in space and has transmitted to Earth 50 million scientific measurements on the environment of space and the planet Mars and engineering measurements on the performance of its own systems.

Last July 14 Mariner flew past Mars at an altitude of 6,118 miles recording the first close-up pictures of the planet's surface and measuring the density and height of the Martian atmosphere.

Other scientific information was collected during the 10-month mission by the spacecraft's magnetometer, trapped radiation detector, solar plasma probe, cosmic dust detector, ionization chamber and cosmic ray telescope.

The command on October 1 originated in the Space Flight Operations Facility at NASA's Jet Propulsion Laboratory, Pasadena, California. It was radioed to Mariner IV by a 100 kilowatt transmitter at the Goldstone, California, station of NASA's Deep Space Network.

The command was transmitted at 5:30 p.m., EDT and was received by Mariner at 5:48 p.m., EDT. The final information from Mariner IV was recorded at 6:05 p.m., EDT at Goldstone and at JPL, indicating that the antenna switchover had occurred. The radio signals ended when Mariner was 191,059,922 miles from Earth.

Mariner was 19,369,086 miles from Mars and traveling at a velocity of 90,499 miles relative to Earth. The spacecraft had traveled a total of 418,749,386 miles in its curving orbit around the Sun.

Although it has achieved its mission objectives, JPL and NASA officials said additional scientific and engineering data may be obtained from Mariner if it is still operating in 1967 when the Earth-spacecraft distance is about 30 million miles.

During the next two years it will be possible to track the spacecraft radio signal with a new 210-foot antenna at Goldstone. No telemetry (radioed reports on measurements) will be received during this period.

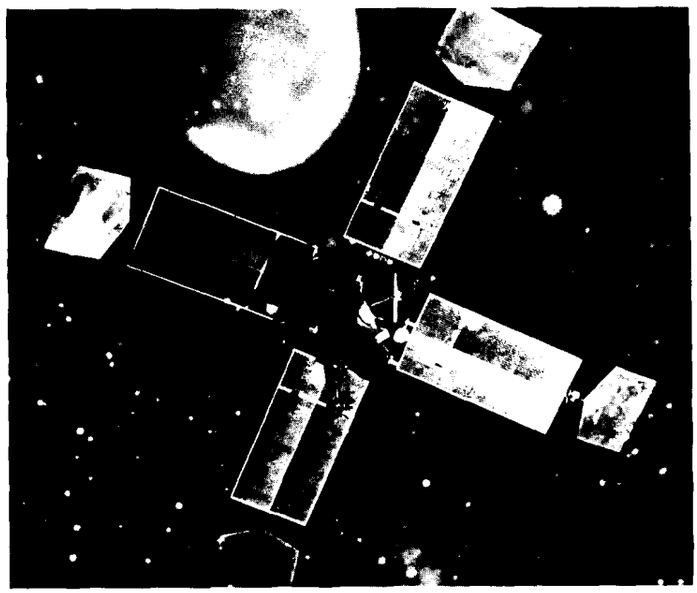
HAGERTY NAMED CONSULTANT

Dr. William W. Hagerty, president of Drexel Institute of Technology in Philadelphia, was recently sworn in as a consultant to NASA by NASA Administrator James E. Webb.

Webb said the 49-year-old engineer, widely known in engineering circles, will advise NASA in the area of university-industry relations.

A native of Holyoke, Minn., Hagerty was graduated from the University of Minnesota in mechanical engineering and earned a master's degree and his doctorate at the University of Michigan.

He entered the engineering educational field in 1940 as an instructor at Villanova College.



This four-panel electrical complex on NASA's Mariner IV spacecraft contains 28,224 separate solar cells. During its months in space the panels were exposed to radiation extremes and high-speed particle bombardment. Yet when Mariner skimmed past the planet Mars last July 14 after a journey of some 350 million miles, the solar panels operated the onboard cameras like clockwork and helped give man his first closeup photos of Mars.

CHRIS KRAFT DAY NOVEMBER 10

Christopher C. Kraft Jr., Space Flight Director at Manned Spacecraft Center, will be honored in his home town of Hampton on November 10.

Kraft will be honored with a full day of ceremonies under the joint sponsorship of the City of Hampton and the Hampton Roads Jaycees.

The schedule for the day will include the following:

10 a.m. - Kraft will address all Hampton high school seniors and the science clubs of other Peninsula high schools.

12 noon - Luncheon in the Virginia Room, Chamberlin Hotel with Congressman Thomas N. Downing serving as toastmaster. Guest speaker will be CBS News Correspondent Walter Cronkite.

3 p.m. - Program at Aerospace Park, Mercury Boulevard.

3:15 p.m. - Interment of Time Capsule

7:14 p.m. - Dinner at Chamberlin Hotel.

Only a limited number of tickets will be sold for the luncheon and dinner. They may be purchased from Amos Spady Jr., Building 1297, telephone 4815, or Axel Mattson, Building 1219, telephone 4596.

FOR SALE: 175-gallon fuel oil storage tank, oil filter included. Farmer, 595-4037.

FOR RENT: Room for gentleman. Heinatz, PA 2-7673.

FOR RENT: Waterfront 2-bedroom apartment, located on second floor - $100 per month; first floor 1 bedroom apartment - $75 per month. Both furnished with heat, water, and garage. Goodson, 723-3716.

FOR SALE: 1965 Pontiac LeMans convertible. Satterthwaite, 484-2475 Chesapeake.

FOR SALE: 1962 Windsor house trailer, 10 x 55, two bedrooms. Flack, 877-1773.

UNITED FUND RECEIVES $67,050

As of press time on Wednesday, Center employees and contract representatives and service contract employees assigned to the Langley Center had contributed or pledged a record total of $67,050.21 to the United Fund effort. This represented $65,510.71 from 4012 Center employees for an average contribution of $16.33 from 93.2 percent of the staff. Contract representatives and service employees contributed a total of $1,539.50.

Thomas A. Harris, Chairman of the Center's drive, expressed his appreciation to all Center employees for their generous gifts of money, time, and effort in making this such a successful campaign.

Harris urged division chairmen to send in their final reports to the financial chairmen as soon as possible so the drive can be closed.

COST REDUCTION PROGRAM DISCUSSED

A meeting of the Center's cost reduction monitors was held recently in the Headquarters Building. T. Melvin Butler, Langley Cost Reduction Officer, opened the meeting by citing some of the actions taken here to strengthen the cost reduction program, among them being the emphasis placed on reporting of cost reduction achievements to make them more meaningful and acceptable.

Dr. Floyd L. Thompson, Director, made several points in support of the need for an affirmative cost reduction program. He pointed out, "If we are to accomplish the goals of NASA, we must first realize that appropriated funds must be spent wisely and astutely. Even if we have come to look upon this philosophy as a way of life, we should always be alert to changing technology which offers a continuous challenge for inventiveness and ingenuity."

Dr. Thompson stated that cost reduction should never be artificially induced by starting with extravagance and then cutting back. He also challenged the cost reduction monitors who submitted either negative reports or no reports during the first quarter of Fiscal Year 1966 to show more imagination in working with supervisors in their respective divisions to uncover suitable cost reduction items and to instill the basic philosophy of cost reduction among the personnel.

WANTED: Ride from Forrest Dr., Route 17 to W.A. on 8 shift. Dianne Adams, 3591.

WANTED: Driving combination to Langley Circle to W.A. on 7:30 shift. Hatfield, 3551.

WANTED: Driving combination from Deer Park to W.A. on 7:30 shift. Hall, 4691.

WANTED: Ride from Wythe to W.A. on 8 shift. Franceschi, 3318.

WANTED: Good home for black and white pups - mother is golden Retriever. Kurzhals, 851-1246 after 5 p.m.

FOR RENT: 3-bedroom waterfront rancher in Seaford - $125 per month. Schultz, PA 3-3600.

FOR SALE: 17-inch Magnavox table model TV - $35. Call Grantham, 838-3351.

FOR SALE: 3-bedroom rancher with fenced backyard. McCord, 838-3267.

FOR SALE: 1964 Chevrolet. Williams, 229 Raleigh Ave.

FOR SALE: 8-foot pool table - $75. Voros, 877-2696.

FOR SALE: 8-foot day cruiser, 60 hp motor, trailer - $1150. Whitehead, 596-9172.

As NASA approaches the half-way point in its projected total of 12 Gemini flights, here are the men who will fly Gemini 6 this month and the astronauts who have flown so far. At the left are Gemini 6 pilots Walter Schirra (top) and Thomas Stafford. On the top line: Virgil Grissom and John Young who flew Gemini 3 last March. Center line: James McDivitt and Edward White, Gemini 4 in June. Bottom: Gordon Cooper and Charles Conrad, Gemini 5 in August. The first two Gemini flights were unmanned.

COURSE OFFERED EMPLOYEES

The York County Adult Education program is sponsoring a course in Introduction to Digitial Computers. The course will cover a general introduction to digital computers, data processing systems, and an introduction to programming an IBM 1401 digital computer.

Registration and the first class meeting will be held at 7 p.m. on Monday, October 25 in Room 103, York High School. A series of IBM booklets entitled Introduction to Programming will be used for a text. Its cost will be approximately $5 and the fee for the course will be $10. The class will meet on Monday and Thursday evenings for a period of 10 weeks.

For further information call the York County Adult Education Office, 898-5957, during the day or the instructor, Richard Margason, 877-1376 after 5 p.m.

FOR SALE: 1960 Vauxhall - $200. Barr, 868-9270.

FOR SALE: Formica breakfast set with table and 6 chairs - $60, 9 x 12 gray rug - $35. Privette, 244-7237.

FOR SALE: 12 hp Sea King outboard motor - $60. Phaup, 826-6941.

FOR RENT: Room with bath. Marra, 596-2104.

WANTED: Alternate driver from Newmarket-Briarfield Rd. area to E.A. on 8 shift. Parker, 2631.

QUESTIONS AND ANSWERS ON RETIREMENT AMENDMENT

The following questions and answers have been prepared by the Civil Service Commission to answer the many questions being received about P.L. 89-205. The new law provides for certain increases in Federal Civil Service retirement system annuities.

Q. What is the effect of Public Law 89-205?

A. It will increase all civil service retirement and survivor annuities having a commencing date which is not later than December 1, 1965. (A bill has been introduced into Congress to extend the retirement deadline to December 30, 1965).

Q. By how much will the annuities be increased?

A. Except as explained in answer to the next question, the increase depends on the commencing date of the annuity: annuities which commenced on or before October 1, 1956 will be increased by 11.1 percent; annuities which commenced after October 1, 1956 but no later than December 1, 1965 will be increased by 6.1 percent.

Q. What is the exception to these percentage increases?

A. In a few cases where a survivor annuity is payable to a widow (or widower) of an employee who died before February 29, 1948, or to the widow (or widower) of an employee who retired before April 1, 1948, these annuties will be increased by 15 percent or $10 a month, whichever is less.

Q. Must I apply for the increase?

A. No. The increases will be paid automatically to all annuitants entitled to them. You need not apply or write to the Civil Service Commission. However, if your are an annuitant who has waived part of his annuity to keep his income below a certain limit, you should write to the Civil Service Commission asking for the increase if you want it.

Q. I am enrolled in a health benefits plan for which premiums are deducted from my monthly annuity check. Does this affect the amount of the increase?

A. Health benefits deductions are part of the gross annuity, and the percentage increase will be applied to the gross annuity which would be payable if these deductions were not made. The new gross annuity rate then will be adjusted for the health benefits coverage.

Q. Under the Retired Federal Employees Health Benefits Program, I receive a contribution which is added to my monthly annuity toward a private health insurance plan. Does this affect the amount of the increase?

A. A health benefits contribution which is added to the annuity is not part of the gross annuity. Therefore, the amount of the contribution ($3.50 or $7 a month) will not be considered in computing the amount of the increase.

Q. A portion of my annuity was purchased by voluntary contributions which I paid into the retirement fund when I was an employee. Will this portion of my annuity be increased?

A. No. The law does not permit additional annuity purchased by voluntary contributions to be increased.

Q. I am the survivor of an employee who retired before October 1, 1956. However, he died after that date. Will my survivor annuity be increased by 11.1 percent or by 6.1 percent.

A. The percentage increase to survivors of a deceased annuitant depends on the commencing date of the decedent's (not the survivor's) annuity. In this case, the deceased annuitant retired, and his annuity commenced before October 1, 1956; therefore, the survivor's annuity will be increased by 11.1 percent. If the deceased annuitant had retired and his annuity commenced after October 1, 1956, the survivor's annuity would be increased by 6.1 percent.

Q. I retired and my annuity commenced before October 1, 1956. If I should die after December 1, 1965, will the survivor annuity payable at my death be increased?

A. Yes. The annuity payable upon death to the qualified survivor(s) will be increased by the same percentage as the retired annuitants' in this case by 11.1 percent. Had the annuitant retired with annuity commencing after October 1, 1956, the increase in survivor annuity would be 6.1 percent.

Q. Are survivors of active employees who die after December 1, 1965, affected by the new law?

A. Yes. Qualified children of employees who die on or after December 1 will have their survivor annuities increased by 6.1 percent. However, this increase will not apply to a widow's annuity. (The reason for the difference is that a widow's annuity is based on the employee's high-5 average salary years and therefore reflects cost-of-living increases in salary rates, but a child's annuity is in a fixed amount which does not reflect these salary increased.)

Q. I am now an employee and am eligible for retirement. What is the latest date on which I can retire on an immediate annuity and get the 6.1 percent annuity increase?

A. November 30, 1965. The increase applies only to annuities which commence no later than December 1, 1965. Since annuities to employees who qualify for immediate retirement commence the day after retirement, anyone who retires as late as November 30, 1965, will have his annuity commence December 1, 1965, and will get the increase. The annuity of any employee who retires on or after December 1, 1965, must commence after that date, and he will not be eligible for the 6.1 percent increase.

Q. If I retire on or before November 30, 1965, will I also get the 2 percent increase which is payable under a previous law to employees who retire during 1965?

A. Yes. Under the previous law and the new law, the annuity of an employee who retires on or before November 30, 1965, is increased twice.

Q. Does the new law grant an annuity increase to employees who retire on or after December 1, 1965.

A. No. Employees who retire between December 1, 1965, and December 30, 1965, will get only the 2 percent increase under the previous law. Employees who retire between December 31, 1965, and December 30, 1966, will get only a 1 percent increase under the previous law.

FOR SALE: Royal portable typewriter - $20. Lindler, 229-5799.

FOR SALE: 1957 Ford, 4-door - $175. McSmith, 722-8488.

FOR RENT: Furnished 4-bedroom house in Poquoson. Martin, 868-2311.

FOR SALE: 7-room brick rancher - 2 baths and attached garage. Houser, TR 7-1667.

FOR SALE OR TRADE: Browning automatic shotgun for Browning automatic magnum. Ferree, 826-1174.

FOR SALE: 1946 Ford pick-up truck - 1/2 ton - no bed, needs minor repairs. Dayton, 642-2091.

FOR SALE: 1965 Corvette, both tops, 4 speeds; also 3-bedroom, 2-bath rancher in Hidenwood. Cobb, 596-8240.

DR. EUGENE M. EMME APPH LaRC EE W

Langley Researcher

VOLUME 4, NUMBER 21 LANGLEY RESEARCH CENTER NOVEMBER 5, 1965

HAMPTON DESIGNATES NOVEMBER 10 AS CHRISTOPHER C. KRAFT DAY

Christopher C. Kraft Jr., Assistant Director for Flight Operations, NASA Manned Spacecraft Center, will have his day in his home town of Hampton on November 10.

The NASA official will be honored with a full day of ceremonies under the joint sponsorship of the City of Hampton and the Hampton Roads Jaycees.

Chris Kraft Day is intended to call attention to the accomplishments of one of Hampton's most outstanding native sons. The city honors, through him, the many thousand "back-up" people in Hampton, Houston and at the other NASA facilities who support the astronauts and whose efficiency has brought about the spectacular successes in the U.S. space program.

The program will open at 10 a.m. with Kraft addressing all Hampton high school seniors and the science clubs of other Peninsula high schools. This will be followed at noon with a luncheon at the Chamberlin Hotel. Congressman Thomas N. Downing will serve as toastmaster and guest speaker will be CBS News Correspondent Walter Cronkite. A program will be held at the Aerospace Park on Mercury Boulevard at 3 p.m. with the interment of a time capsule scheduled for 3:15 p.m. The day's events will close with a dinner at the Chamberlin Hotel at 7:15 p.m.

As Assistant Director for Flight Operations, Kraft is responsible for functioning as NASA Flight Director during manned space flights. In this capacity he exercises the critical responsibility of controlling the flight from the lift-off of the launch vehicle to the landing of the spacecraft in the recovery area. Kraft has decision-making responsibility with regard to go/no-go decisions, aborts, and the redesignation of landing areas which may be required at any time during manned missions.

In addition to his mission-related duties, Kraft exercises full authority and directs management responsibility over the efforts of four divisions which are comprised of approximately 570 highly technical and professional civil service personnel, who are engaged in the conceptual development and establishment of systems requirements in support of both Gemini and Apollo programs.

After receiving his B.S. degree in Aeronautical Engineering from Virginia Polytechnic Institute in December 1944, Kraft entered the Federal Service as a member of the Langley Research Center. During his tenure at Langley, he was noted for his outstanding contributions in the field of airplane flight research, specifically in the areas of basic stability and control and automatic control.

In 1958 Kraft became one of the original members of the NASA Space Task Group which was then in charge of Project Mercury. His flight test experience and his creative and organizational capabilities enabled him to contribute to the establishment of many of the basic concepts of the Mercury operation.

LANGLEY STAFF MEMBERS HONORED AT ANNUAL NASA AWARDS CEREMONY

An annual ceremony for presentation of awards to the staff of the Langley Center was held October 28 on the grounds adjacent to the Activities Building.

A total of 199 persons were honored, including 187 who were presented NASA service emblems and certificates and 12 who received cash awards totalling $9,900 for patents granted by the United States Government in connection with their inventions on the job.

Dr. Floyd L. Thompson, Langley Director, presented a Group Achievement Award to Eugene Schult, Head of the Scout Project Office, to recognize the group's efforts in achieving the outstanding Scout vehicle flight success record during the past eighteen months.

I. Edward Garrick, Chief of Dynamic Loads Division, received a Special Service Award in recognition of "distinguished service to the nation's aerospace programs in conceiving, directing and personally conducting scientific research in the field of aeronautical and astronautical structural dynamics which has contributed significantly to advancements in aerospace flight." A $1,000 check accompanied the award.

I. Edward Garrick

T. Melvin Butler, Assistant Director for Administration, presided at the ceremony.

Charles J. Donlan, Associate Director, presented NASA service emblems to 40 and 30 year recipients. Forty year emblems were awarded to Lucy W. Bainbridge, head of the Stenographic and Report Typing Section, and Ruth T. Belle, both members of the Administrative Services Division. Recipients of 30-year service emblems were Anita D. Bivins, Dynamic Loads Division; Joe Bosta Jr., Plant Maintenance Division; Hovis G. Carter, Mechanical Service Division; Blake W. Corson Jr., Head of 16-Foot Transonic Tunnels Branch, Full-Scale Research Division; Ray H. Wright, Head of Full-Scale Analysis Branch, Full-Scale Research Division; Thomas R. Turner, Full-Scale Research Division; John L. Hudson Sr., Assistant Chief of Research Models and Facilities Division; Thomas R. McGrath, Office of Engineering and Technical Services; Anshal I. Neihouse, Office of the Director; Robert A. Perkins, Flight Mechanics and Technology Division; Norman R. Richardson, Flight Reentry Programs Office; Charles C. Shufflebarger, Technology Utilization Officer; and James C. Tingle, Head of Employee Services Branch, Personnel Division.

(Continued on page 5)

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Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

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ANNOUNCEMENTS

WEDDING PLANS. . .Making plans to join the ranks of newly weds is Annie J. Andleton, Structures Research Division. She will take her final vows with Chaffin L. Wesley, Newport News, on November 20. George Hausch, Flight Vehicles and Systems Division, will serve as an usher.

SKYWATCHERS. . .A meeting of the Skywatchers Astronomy Club will be held on Saturday, November 6 at 6:30 p.m. at the Activities Building.

NEW ARRIVALS. . .Announcing the birth of a daughter, Mary Ursula, on October 12 is John Page, Contract Administration. . .Weighing in at seven pounds, eleven ounces on October 21 was Donald Joseph, new son of Donald Dow, Structures Research Division.

SINGLETON CLUB. . .A reorganizational meeting and party of the Singleton Club will be held on Wednesday, November 10 at 7 p.m. in the Blue Marlin Room, Congress Motorview Inn in Buckroe. A fee of fifty cents per person will be charged for refreshments. All single persons interested in attending or willing to help organize and plan the party should send their names and telephone humbers to Sharon Huggett, Mail Stop 301.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on November 9 from 3 p.m. until 4 p.m. Mrs. Beverly Beale, Government-wide Service Plan representative, will be here on November 17 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Taylor, 2523, for an appointment.

SAFETY MANUAL. . .A revised edition of the Radiation Safety Manual dated October 1965 was distributed to all staff members this week. All copies of the previous manual should be destroyed.

LEADING ROLE. . .Marcia Otero, wife of Robert Otero, Mechanical Service Division, will sing the leading role in "The Sound of Music" with the Peninsula Civic Opera Company, Incorporated on November 19 and 20 at Denbigh High School. For tickets or additional information call 244-7336.

FOR SALE: Registered male Pointer and large dog house. James, Hayes 642-4109.
FOR SALE: 1960 25-foot Owens boat - $2500. Baals, 596-8218.

AIAA GROUP PLANS MEETING

J. R. Clark

J. R. Clark, Vice-president, LTV Aerospace Corp., a subsidiary of Ling-Temco-Vought, Inc., and General Manager, LTV Vought Aeronautics Division, will be guest speaker at a meeting of the Hampton Roads Section of the American Institute of Aeronautics and Astronautics, on November 18 at the Holiday Inn.

Clark will speak on the XC-142A program. He will discuss the program's origin and objectives and the progress to date of the flight test program. A movie illustrating the progress to date will be shown.

As an aeronautical engineer, Clark played a leading part in the design and development of two of the Navy's well-known fighting airplanes. He was assistant chief engineer for the design and development of the experimental and later the first production version of the F8 Crusader aircraft, still today the Navy's fastest single engine fighter.

Some 20 years earlier he had served as project engineer for the experimental version of the F4U Corsair, the bent-wing propeller-driven fighter that came to be known as "whistling death" to the Japanese in the ocean and island fighting of the Pacific in World War II.

Clark was named Vice-president and General Manager of the LTV Astronautics Division in April 1961, capping a career that began 32 years earlier when he graduated from Massachusetts Institute of Technology with a B.S. degree in Aeronautical Engineering.

The meeting will be preceded by a social hour at 6 p.m., followed by dinner at 7 and the meeting at 8. For reservations call one of the following by noon on November 17: L. W. Enderson, 2524; Robert Keynton, 3431; or Charles Tynan, 2691.

HELICOPTER SOCIETY MEETS NOV. 23

The Hampton Roads Section of the American Helicopter Society will have a panel discussion on "Where is V/STOL Heading?" at its meeting on November 23 in the Warwick Room, Fort Eustis Officers Open Mess.

Members of the panel will be as follows: John Campbell, Associate Chief of Flight Mechanics and Technology Division, panel moderator; Harold Andrews, USN, Assistant Project Manager, X-22 Program; Mrs. Joan Barriage, FAA, Program Manager of Transport and STOL Aircraft; Paul Carpenter, USAAML, Director of Systems, and George E. Dausman, USAF, Engineering Director, CX-6 V/STOL Transport.

The meeting will be preceded by a social hour at 6:30 p.m., followed by dinner at 7:30 and the meeting at 8:30. For reservations call one of the following by noon on Monday, November 22: David Chestnut, 878-3104, or Larry Jenkins, 722-7961.

FOR SALE: Webcor tape recorder - $65, Singer rebuilt sewing machine - $50, 1961 Rambler-Amer, 4-speed - best offer over $400. Pressley, 838-1623.

NASA SELECTS TEN POTENTIAL LUNAR ORBITER PHOTO AREAS

Ten potential areas on the Moon have been selected by NASA for planning the photography by the Lunar Orbiter spacecraft next year.

The areas include examples of all of the major types of the Moon's surface to permit assessment of their suitability for spacecraft landings. Nine of the sites, number one through nine, are within the area proposed for Apollo manned landings and eight, number three through 10, are potential sites for Surveyor soft-landing spacecraft.

The 10 areas are located in a narrow belt along the Moon's equator beginning at about 43 degrees East longitude and stretching to 56 degrees West longitude.

Lunar Orbiter is managed for the Office of Space Science and Applications by the Langley Research Center.

In selecting the Lunar Orbiter photography sites, Dr. Homer E. Newell, NASA's Associate Administrator for Space Science and Applications, said, "We are alerting the scientific community to these potential areas in order to attain the widest possible exchange of information on the significance of the Lunar Orbiter photography.

"Before Lunar Orbiter flight time next summer," Dr. Newell said, "we are asking scientists to concentrate such ground-based observations as radar, infrared and polarization in these areas. Scientists with such data will be supplied Lunar Orbiter pictures when they are returned to Earth for comparative analysis with their own data."

Dr. Newell emphasized that the current site selection could be modified by a number of factors. "It would be most important, for instance, to attempt to photograph an area in which a Surveyor spacecraft has already landed," he added.

On its mission, Lunar Orbiter first will be injected into an elliptical orbit 1150 miles by 125 miles around the Moon to study its gravitational field. While in this orbit, the Orbiter's photographic system will be exercised by taking up to 19 preliminary pictures. Depending on the orbit in which this test is conducted, the pictures will show the vicinity of the eastern limb or edge of the Moon and could include some photographs of the hidden side of the Moon.

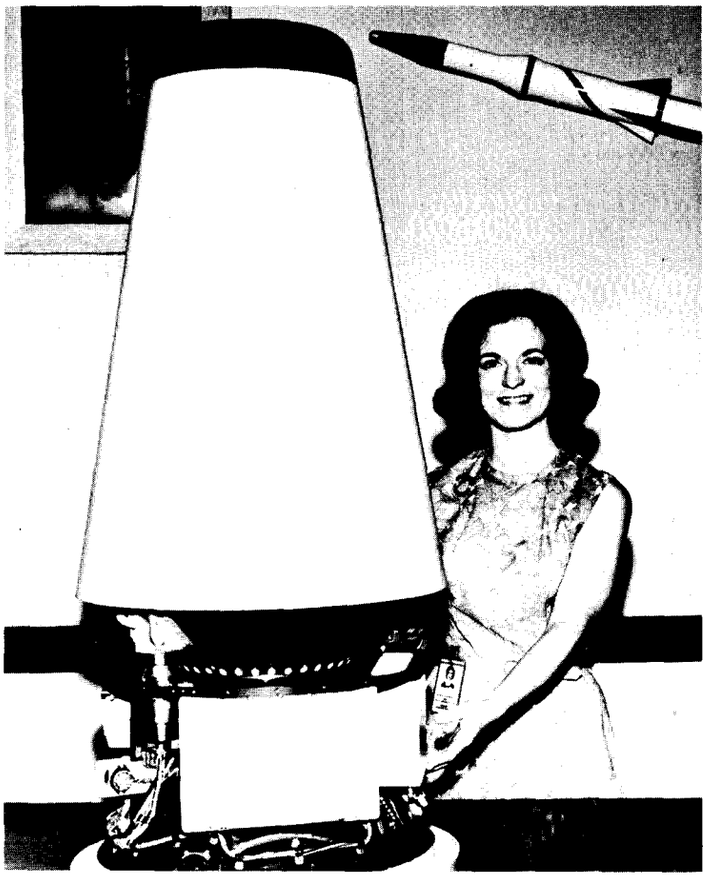
After this camera test, if no unusual gravitational field is detected, Lunar Orbiter will be transferred into a new orbit with a 1150 miles apolune and a perilune as low as 29 miles, which gives an orbital period of 3-1/2 hours.

The eight-day picture-taking trip across the target areas will then begin.

Lunar Orbiter will take a series of photographs of one of the target areas about every fifth orbit, covering an area about 10 by 40 miles with high resolution pictures and an area 23 by 56 miles with medium resolution stereoscopic pictures. One frame consists of one high resolution and one medium resolution picture.

After each photographic pass, Orbiter will transmit up to four frames to Earth stations. The remaining 12 frames of each site will be transmitted to Earth only after all 160 frames of the 10 areas have been taken. Complete picture playback will take some 14 days.

FOR SALE: Carb. and manifold kit complete with installation instructions, linkage, tubing, etc., fits all Corvair Spyders, 1962-1966 - $60. Fontana, 723-1425.



Claire Baldwin, a student trainee in the Cooperative Work-Study Program, is shown with a Scout payload. During this phase of her training she was assigned to the Applied Materials and Physics Division.

WOMEN IN GOVERNMENT

Claire Baldwin is preparing to take her place among the scientists in the nation's space program as the first member of the fairer sex to enroll as a student trainee in the Cooperative Work-Study Program at the Langley Research Center.

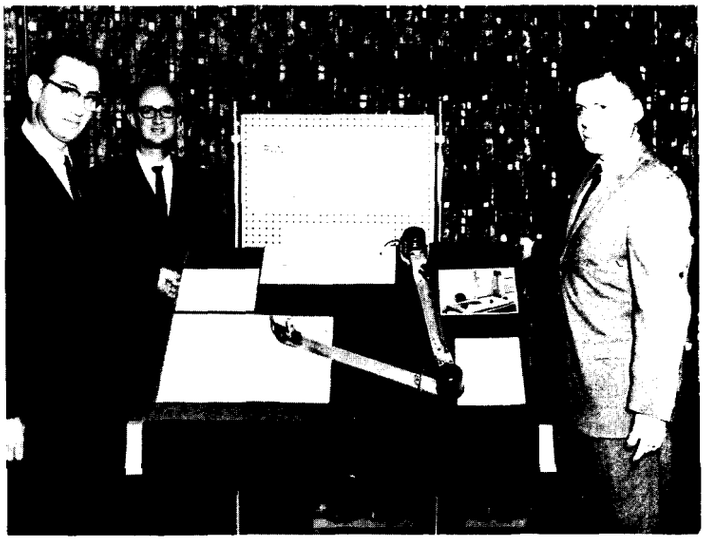
Claire, a petite red head, was born August 18, 1943 in Brockton, Massachusetts. She graduated from Brockton High School and entered the student trainee program in 1962, after completing one year of study at Northeastern University, Boston, Massachusetts. She will receive her Bachelor of Arts degree in Physics from Northeastern in June 1966.

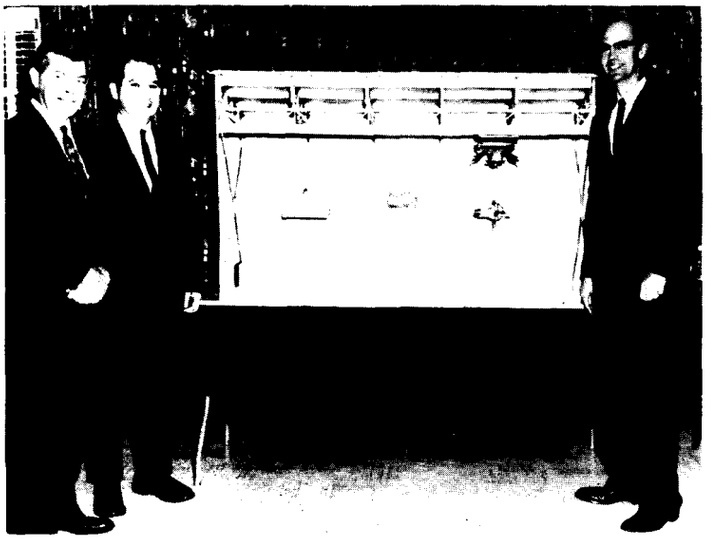
Claire has always been interested in science and mathematics and selected Physics as her major because it offers a broader area for developing her scientific interests.

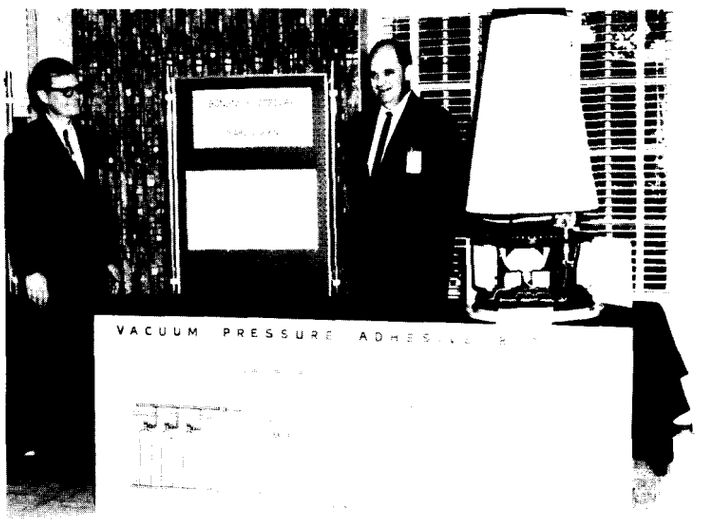
When not studying, she enjoys reading, horseback riding, bridge, and painting.

The Cooperative Work-Study Program is designed to provide formalized training for students preparing for professional careers in aero-space research, development, and design in the major fields of engineering, physics, and chemistry.

The student normally works about seven 3-month work periods at the Center with intervals of residence at school totalling approximately 36 months. The assignments are rotated each work period. In this way, the student gains a well-rounded work experience.







INVENTION AWARDS - Upper left photograph - Inventors P. F. Fuhrmeister and Milner H. Eskew, holding the invention for which they received a $1,000 award are shown with Patent Attorney William H. King. Upper right photograph - Inventors Arthur W. Vogely and Roy F. Brissenden appear with their joint invention which was awarded $2,300. Patent Attorney Howard J. Osborn appears at the right of the display. Lower left photograph - Inventor Charles B. King is receiving his invention with Patent Attorney Wallace J. Nelson. King received a $1,500 award for his Bonding Procedure contribution. Lower right photograph - Inventor Howard B. Miller displays his invention which received an award of $1,100. Patent Attorney C. Gordon McBride is is shown with Miller. The above mentioned Patent Attorneys constitute the Center staff which prepares patent applications on ideas submitted by Langley inventors. These applications form the basis for NASA Inventions and Contributions Board award actions.

ENGINEERS CLUB MEETS NOV. 18

The Engineers Club of the Virginia Peninsula will meet on Thursday, November 18 at 8 p.m. at the Thomas Eaton Junior High School in Hampton.

Jack McGrath, Vice-president and Director of Hillerich and Bradsby Company, Louisville, Kentucky, will speak on "The Engineered Golf Club." Today's golf club is an engineered product which is precision manufactured with a high degree of care and accuracy. McGrath will review its history and present concepts of design, development, and manufacture. He will also show slides on ancient clubs.

A Dutch-treat dinner will be served at Eli's Restaurant at 6:30 p.m. A social period will be held at 6. Reservations for the dinner should be made with F. W. Schmidt, CH5-1714, or A. W. Robbins, TW8-5495.

SCHNEIDER RECEIVES NEW POST

The NASA has announced the appointment of William C. Schneider as Deputy Director, Mission Operations and Gemini Mission Director. He has been Deputy Director of the Gemini Program since November 1, 1963.

LeRoy E. Day, Director, Gemini Test, will become acting Deputy Director of the Gemini Program.

Schneider joined NASA in 1949 at the Langley Research Center as a research scientist. From December 1955 to December 1959 he was Head, Air-to-Air Missiles, USN BuAir; from December 1959 to July 1961 he was Director, Launch Vehicles, Navy Bureau of Weapons. He was Director of Space Systems, International Telephone and Telegraph Company, Nutley, N.J., from July 1961 until he joined NASA in 1963.

INVENTION AWARDS - Earl D. Hilburn, Deputy Associate Administrator of NASA, presented Invention and Contribution Awards to Center employees at the annual awards ceremony held last week. Upper left photograph - William D. Harvey and Howard B. Miller, receive a joint award of $1,000. Upper right photograph - Hilburn presents a $1,000 award to Weymouth B. Crumpler. Lower left photograph - Emmett Bryant and Eugene C. Nauman receive a joint award for $1,000. Lower right photograph - Anthony Fontana receives a check for $1,000.

ANNUAL NASA AWARDS CEREMONY

(Continued from page 1)

Earl D. Hilburn, Deputy Associate Administrator of NASA, presented Inventions and Contributions Awards to 12 employees.

Largest single monetary patent award of $1,500 went to Charles B. King, Mechanical Services Division, for a bonding procedure to obtain a void-free controlled bond line gap between a plastic sleeve and a metallic liner and for forcing adhesive into the gap to bond the two components.

Roy F. Brissenden and Arthur W. Vogeley, Head of the Guidance and Control Branch, both of Space Mechanics Division, shared $2,300 for a cable arrangement for rigid tethering. The Division, headed by William H. Phillips, was honored in last year's awards ceremony with a Presidential Citation for this application.

Other awards were presented to Howard B. Miller, Mechanical Service Division, $1,110 for an electrical connector used to join two thermocouple leads; Weymouth B. Crumpler, Research Models and Facilities Division, $1,000 for a multilegged support system that serves as a mounting device between a wind tunnel model and a balance frame.

Anthony Fontana, Applied Materials and Physics Division, $1,000 for a solar sensor that accomplished all of the phases of solar orientation, sun detection, gross sun orientation, and fine pointing; Paul F. Fuhrmeister, Chief of Analysis and Computation Division, and Milner H. Eskew, Assistant Head of the Data Systems Branch of the same division, shared $1,000 for a random function tracer, a device which follows lines on contour maps and converts the tracings into digital coordinates.

William D. Harvey, Aero-Physics Division, and Howard B. Miller, Mechanical Services Division, shared $1,000 for a heat sensing instrument for detecting infinitesimal amounts of heat flowing onto a surface and is used for heat transfer measurements in the Hot Shot Tunnel; Emmet Bryant, Head of Structural Mechanics Instrumentation Section, Instrument Research Division, and Eugene C. Naumann, Dynamic Loads Division, $500 each for a fatigue testing device that applies random load levels to a test specimen based upon the concept of converting load histories stored in digital form to electrical reference signals whose value may be predetermined.

Division chiefs presented service emblems to 172 staff members who have completed 20 years of Government service.

WANTED: Choir director for Fox Hill Central Methodist Church. Baynes, 851-2091 after 5 p.m.

WANTED: Ride from Fourth St., Buckroe, to W.A. on 8 shift. Ghivizzani, 3216.

WANTED: Driving combination from Baron School to W.A. on 7:30 shift. Wagner, 4572.

WANTED: Ride from Berkshire Terrace to W.A. on 7:30 shift. Davidson, 3483.

FOR SALE: 62-piece set of Caprice china by Sango - $30, 20-inch, 3-speed window exhaust fan - $15. Thomson, 596-2832.

FOR SALE: Boy's 20-inch bicycle - $16. Martz, TW8-5646.

ADAMS HEADS MAJOR NASA OFFICE

Dr. Mac C. Adams, former member of the Langley Center staff, was sworn in October 4 as Associate Administrator for Advanced Research and Technology at NASA Headquarters by Dr. Robert C. Seamans Jr., Associate Administrator.

Dr. Adams, who succeeds Dr. Raymond L. Bisplinghoff, took charge of the major NASA program office responsible for the technical base on which the nation's present and future space and aeronautics progress rests. The OART has management control of five NASA research centers and about 12,000 employees.

At the time of his NASA appointment, Dr. Adams was vice-president and assistant general manager for space systems at the Avco Corporation, Wilmington, Mass. He has made significant contributions in the fields of high-altitude aerodynamics, heat transfer, reentry of high speed vehicles into earth atmosphere and associated physical processes such as ablation and radiation.

Dr. Adams received his B.S. degree in Mechanical Engineering in 1946 from Cornell University and joined the Langley staff on October 28, 1946. He resigned in 1947 to return to school. He returned to the Center on August 12, 1949 and resigned in 1951 to return to Cornell to complete his work for his Ph.D. degree.

A native of Gretna, Virginia, he served in the Navy in World War II, followed by a year at the University of Virginia.

Dr. Bisplinghoff, who assumed the OART post August 1, 1962, has become special assistant to James E. Webb, NASA Administrator. In his new capacity he will work on a number of policy and technical problems in the area of advanced technology, including the supersonic transport, electronics and propulsion.

FGAA GROUP MEETS NOV. 17

The Federal Government Accountants Association of the Virginia Peninsula will meet on Wednesday, November 17 at the Virginian Restaurant at 6:30 p.m.

The Federal Government Accountants Association is a national, professional organization of and for persons in the Federal service who have administrative and policy advisory responsibilities in areas of accounting, budgeting, auditing and similar financial control operations.

Activities of FGAA members are directed toward the following basic aims:

1. The advancement of accounting theories and practices in order to effect continued improvement in Federal financial management.
2. The conduct of research which will lead to improved financial management techniques.
3. The attainment of higher quality in the caliber of Federal Government financial managerial personnel.

Persons interested in joining the organization may contact Tom Lindsay, 4702.

FOR SALE: Buffet B-flat tenor saxophone, also Fender guitar and amplifiers. Bavuso, 826-1303 after 4:30.

FOR SALE: 1963 1/2-ton Chevrolet pickup truck - $1200. Lipford, 838-3371.

FOR SALE: 3-bedroom brick rancher with attached garage. Greene, 723-8464.

FOR SALE: 1959 G.E. 17-inch portable TV - $15. Harris, 826-4344.

Six employees of the Mechanical Service Division recently received cash awards for suggestions under the NASA Incentive Awards Program. William B. Mayo (left), Chief of Mechanical Service Division, presents the awards to James R. Davis, Harry L. Bloxom, Fred F. Eichenbrenner, Dwight G. McSmith, Cornelius B. Apple, and Annie L. Coleman. The awards were presented for the following suggestions: Davis - Elimination of vibration in vacuum chamber; Bloxom - Filament winding machine protection; Eichenbrenner - Parking restrictions; McSmith - Addition to NASA Work Order Form #L36F125; Apple - Crystal accelerometer vacuum attachment, Coleman - Payroll check receipt.

IEEE PLANS DINNER-DANCE

The Hampton Roads Section of the Institute of Electrical and Electronics Engineers will hold a dinner-dance on Friday, November 19 at the Holiday Inn on Mercury Boulevard.

Guest speaker will be State Senator Fred W. Bateman. Senator Bateman has been a member of the Senate of Virginia since 1960 and currently represents the 27th Senatorial District (Newport News). He will speak briefly about current and future scientific and industrial developments in the area.

A social hour will be held at 6:30 p.m., followed by dinner at 7:30 and the business meeting at 8:30. Dancing to music by The Lyrics will take place from 9:30 until 12:30 a.m. Admission will be $4 per person or $8 per couple. The cost includes the social hour, dinner and setups for the dance.

For reservations call one of the following by noon on Wednesday, November 19: Frank Strehle, 4811, or Bob Faust, 3332.

WANTED: Driving combination from Lynnhaven Dr. to W.A. on 8 shift. Armistead, 4817.

FOR SALE: 1961 Karmman Ghia with new tires - $500, also ham radio and equipment. Halsey, 595-0514.

FOR SALE: Storm windows, screens, swinging door and glass frames. Watson, PA 2-6464.

FOR SALE: 1961 Renault - $375, antique shelf clock - $112, metal office desk - $75. Anglin, PA 3-4993.

FOR SALE: Revere monaural tape recorder. Jenkins, PA 3-5352.

FOR SALE: 21-inch Philco console TV - $50, hobby horse-$20. Berryman, 596-3988.

FOR SALE: Heath kit auto FM radio. Pearson, 838-0151.

Carrie W. Spence William P. Haney Erbie L. Johnson

SEVEN EMPLOYEES RETIRE

Seven employees recently retired from the Center with a combined total of almost 180 years of Government service. The retirees are: Carrie W. Spence, Flight Mechanics and Technology Division; William P. Haney, Mechanical Service Division; Erbie L. Johnson, Electrical Systems Division; Wayne D. Hurlbut, Flight Mechanics and Technology Division; James E. Ferguson, Procurement Division; Helen G. Rankin, Research Reports Division, and Paul R. Marks, Mechanical Service Division.

Mrs. Spence is a native of Charleston, West Virginia. She graduated from Gallia Academy High School in Gallipolis, Ohio, and attended Nursing Training School at Hatfield Memorial Hospital, Huntington, West Virginia. She joined the Center staff on March 6, 1944 as a draftsman and retired September 30.

Haney was born October 8, 1903 in Pearisburg, Virginia. Before joining the Center staff he worked at the Norfolk Navy Yard in Portsmouth and the Newport News Shipbuilding and Dry Dock Company. He started his NASA career on November 21, 1945 as a machinist and retired on October 8.

Johnson was born October 8, 1903 in King William County, Virginia, and attended King William High School. He worked at the Newport News Shipbuilding and Dry Dock Company for a number of years before joining the Center staff on August 11, 1947 as an Electrician. He retired on October 8.

Hurlbut was born October 6, 1910 and claims Easton, Pennsylvania, as his home town. He graduated from Easton High School and served in the U.S. Army Air Corps from 1929 to 1939. He entered on duty at the Center on June 9, 1941 and retired on October 13.

Ferguson was born January 9, 1904 in Winston-Salem, North Carolina. He attended Maury High School in Norfolk and was in business for himself as a store-owner and contractor before joining the Langley staff on October 21, 1940 as a Storekeeper. He transferred to Muroc Flight Test Station at Muroc, California, in 1948 and returned to Langley in 1950. He retired on October 5.

Miss Rankin is a native of Indianapolis, Indiana. She received her A.B. degree in English from Indiana University and worked in the public library in Indianapolis for eleven years. She worked for a number of Government agencies in Washington before joining the NASA Headquarters staff in 1941. She transferred to Langley in 1947 as a Librarian and retired September 30.

Marks was born September 24, 1903 in Huntington, West Virginia. He graduated from Huntington High School and worked for a number of years as a carpenter and cabinetmaker in West Virginia and Maryland. He entered on duty at the Center on February 17, 1944 as a cabinetmaker and retired October 15.

INTERNATIONAL COURT AT WALLOPS

A flag-raising ceremony was conducted at Wallops Station last month to dedicate the new international court for display of foreign flags.

Purpose of the international court, which was recently completed on the main base at Wallops, is to fly the flags of foreign countries working there on any given day. The court consists of a semi-circular array of seven flag poles with a facade at the base for displaying the names of the countries.

During the ceremony the flags of Argentina, Brazil, Italy, and Norway were hoisted along with that of the United States. These are the four countries currently at Wallops and a representative from each country participated in the ceremony along with Robert L. Krieger, Director of Wallops.

The international court was constructed in recognition of the important role that Wallops Station plays in the National Aeronautics and Space Administration's international program for cooperation in space research.

In recent years Wallops has had visitors from 52 nations. Nine of these countries have sent personnel there, totaling 130, for periods of training ranging from one month to two years. They are: Argentina, Brazil, France, India, Italy, The Netherlands, Norway, Pakistan, and Sweden.

Seven countries have launched experiments at Wallops - Australia, Canada, France, Italy, Japan, Sweden, and the United Kingdom. Wallops Station has in turn sent some of its own personnel at various times to nine countries to assist them with the development of their space program. These countries are: Argentina, Brazil, India, Italy, The Netherlands, New Zealand, Norway, Pakistan, and Spain.

NASA's program of international cooperation in space research and investigation has involved participation by agencies and individuals of 69 countries. There are agreed cooperative projects under which four foreign scientific satellites have been launched, ten more are planned and 133 sounding rocket launchings have been carried out. Many countries also have participated with ground stations in support of NASA's experimental programs to develop satellite communications and meteorological data.

BLOODMOBILE TO VISIT DEC. 8

The Red Cross Bloodmobile will make its final visit for 1965 to the Center on December 8. Additional donors are needed to help meet the Center's quota. Those who have not registered to donate blood and wish to do so may call East Dispensary, telephone 2243.

President Johnson recently issued the following statement concerning the Red Cross Blood Donor Program:

"In recent times we have made great progress through the enlightened legislation passed by Congress to provide better health and medical programs for the American people. In this we are waging a relentless fight on many of the nation's health problems such as cancer and heart disease.

"One of the essential elements in the practice of modern medicine is the continuing availability of whole blood and blood derivatives in adequate amounts throughout the nation. I, therefore, urge all Federal employees to fulfill their citizenship responsibility by serving as voluntary blood donors through their Red Cross blood centers and community blood banks. In this way, they will be materially assisting the crusade for better health and medical care for the nation."

TABACK TO ADDRESS ASME

Israel Taback

The Peninsula Chapter of the American Society of Mechanical Engineers will hold their monthly dinner meeting on November 18 at the Ranch House located on Route 17. The meeting will feature an address on "The Lunar Orbiter," by Israel Taback, head of the Spacecraft Systems Section, Lunar Orbiter Project Office.

Taback, a research engineer for more than 23 years at the Langley Center, was born in New York City on July 3, 1920. He received the degree of Bachelor of Science in Mechanical Engineering from Cooper Union Engineering School in 1942.

Taback was appointed head of the Spacecraft Systems Section, Lunar Orbiter Project, in September 1963. This program is intended to provide extensive photographic exploration of the lunar surface to aid in the selection of possible landing areas for the Apollo project.

Since joining the Langley Center in February 1942, he has been a pioneer in instrumentation research and development work in the Instrument Research Division. Prior to his present assignment, he was assistant head and head of the Navigation and Communication Branch from 1959. From 1944 to 1959 he headed the Instrument Calibration Laboratory which developed and calibrated all types of commercial and NASA experimental instruments.

Taback will discuss the Lunar Orbiter mission plan, photographic coverage, spacecraft configuration, spacecraft structure, etc. A question and answer period will be held following his presentation.

Reservations may be made by contacting Robert Basford, 723-3212, or Bill Simpson, 244-1184, not later than November 16. Guests are invited.

PROFESSORS TO VISIT HERE

Dr. A. R. Kuhlthau and Dr. Ralph A. Lowry, Department of Aerospace Engineering and Engineering Physics, University of Virginia, will visit the Langley Center on Wednesday, November 10 to discuss some changes that have recently been made in the School of Engineering.

The requirements for the Master and Doctor of Science in Engineering Physics have been revised and employees interested in this program should make an appointment to discuss the changes with one of the professors.

Dr. James B. Eades Jr. and Dr. Fred R. DeJarnette, Department of Aerospace Engineering, Virginia Polytechnic Institute, will visit the Center on Friday, November 19 to consult with students interested in advanced study in that department.

Employees interested in talking with the professors should call the Training Office, 2611, for an appointment.

WANTED: Driving combination or passengers from Denbigh to E.A. on 7 shift. Lee, 2234.

WANTED: Ride from Southampton to E.A. on 7 shift. Patricia Powell, 2595.

TURKEY SHOOT TOMORROW

Sharpshooters are reminded that the Activities Association's Annual Thanksgiving Turkey Shoot will be held on Saturday, November 6 at the Activities Building.

Matches will start at 9 a.m. and continue until 5 p.m. If enough interest is shown, a special match for women will be held. The winner of each match will receive a turkey. No admission will be charged other than 50 cents for each shot.

Firearms will be furnished by the Activities Association or contestants may use their own. The Association will supply 12, 16, and 20-gauge shotgun shells for the shoot. The maximum charge of powder and minimum size of shot should not exceed 3-3/4 drams for powder and number 8 for shot.

The shoot will be supervised by Harold Crate, Research Models and Facilities Division. Any ammunition brought to the match must be turned over to the person in charge of ammunition.

In the interest of safety, all contestants are requested to keep the actions of their firearms opened while on the grounds of the Activities area except when on the firing line.

Lunch may be purchased at the bar in the Activities Building.

UNITED FUND STANDINGS

Division	Percentage	Total
Office of Director	100	$3137.00
Flight Reentry Programs Office	100	545.00
Scout Project Group	100	687.60
Aero-Physics	95	3752.50
Analysis and Computation	93	2668.00
Applied Materials and Physics	95	4478.50
Dynamic Loads	97	4399.00
Flight Mechanics and Technology	92	2861.00
Full-Scale Research	90	4366.00
Instrument Research	92	6372.75
Research Reports	100	1037.00
Space Mechanics	93	2392.00
Structures Research	96	3547.70
MORL Studies Office	100	190.00
Lunar Orbiter Project Office	100	1374.00
Off. Chief, Eng. and Tech. Service	100	1116.00
Electrical Systems	94	2400.50
Flight Vehicles and Systems	97	2879.00
Mechanical Service	92	7260.57
Plant Maintenance	100	1322.75
Research Models and Facilities	100	2770.00
Off., Asst. Dir. for Admin.	100	629.00
Administrative Services	100	906.50
Fiscal	98	1588.84
Personnel	100	858.00
Photographic	94	578.00
Procurement	100	1466.50
Co-op Students and Anonymous		84.00
TOTAL - LRC Employees	93	$65,667.71
Plant Representatives		1,128.00
Service Contractors		661.50
GRAND TOTAL		$67,457.21

Langley Researcher

VOLUME 4, NUMBER 22 LANGLEY RESEARCH CENTER NOVEMBER 19, 1965

Christopher C. Kraft (right), Assistant Director for Flight Operations, NASA Manned Spacecraft Center, was honored on November 10 with a full day of ceremonies by the City of Hampton. During the ceremonies Dr. Floyd L. Thompson, Langley Director, presented Kraft with a 13-plus NACA service pin, designating the number of years he served with the National Advisory Committee for Aeronautics at the Langley Research Center.

NASA TO NEGOTIATE WITH LTV FOR 12 SCOUT LAUNCH VEHICLES

A contract will be negotiated by NASA with Ling-Temco-Vought, Inc., Dallas, for 12 Scout Launch Vehicles.

Langley Research Center, which manages the Scout Project, will conduct the negotiations for a contract to cover a 27-month period. Deliveries will begin about the 15th month at a rate of one vehicle per month.

The contract, expected to be a firm-fixed-price contract, will be worth more than $8 million, exclusive of option provisions for several additional vehicles.

LTV has been a contractor for Scout since the inception of the vehicle program in 1958 when that firm submitted the low bid. The proposed contract, which will place total responsibility for motor procurement with LTV, is a further step in NASA's continuing efforts to achieve greater reliability in the Scout vehicle - which has been successful in each of the past 10 launches.

Several major subcontracts will result from this award, the primary ones being with Aerojet-General Corp., Sacramento, Calif., for the first-stage rocket motor; Thiokol Chemical Corp., Huntsville, Ala., for the second-stage; Hercules Powder Co., Wilmington, Del., for the third-stage, and United Technology Center, Sunnyvale, Calif., for the fourth-stage.

Walter Kidde Co., Belleview, N. J., is expected to re-

(Continued on page 5)

DR. THOMPSON KEYNOTE SPEAKER AT INTERNATIONAL CONGRESS

Dr. Floyd L. Thompson, Director of Langley Research Center, delivered a keynote address at the four-day International Congress on Air Technology held at Hot Springs, Arkansas, Monday through Thursday, November 15-18.

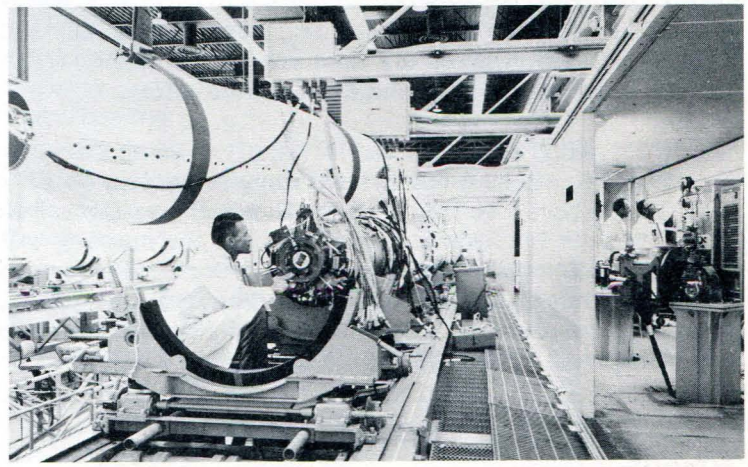
As the principal representative of NASA, Dr. Thompson spoke at the banquet session Tuesday night on "Advances in Aircraft Technology." He discussed the importance of scientific research on the continued leadership of the United States in the field of air transportation - with particular reference to the next decade.

An exhibit of research models and photographs prepared by Langley and illustrating NASA aeronautical research in the subsonic, supersonic, and hypersonic speed ranges was a feature of the air congress, which was attended by aeronautical experts of the United States and several foreign countries.

The congress was devoted to consideration of winged air technological development and the impact of aviation on world society in the next decade. The presentation of papers by aviation authorities of this country and other nations was scheduled during the four days of the technical symposium.

Representing the NASA Flight Research Center, Edwards, California, at the technical sessions was Joseph Walker, Chief of Research Pilots, who spoke Wednesday morning on the X-15 research airplane as a tool for progress in hypersonic flight. Walker has made a number of flights in the rocket-propelled X-15.

The Valley Education and Research Foundation, representing the states of Arkansas, Missouri, Kansas, and Oklahoma, was sponsor of the congress which will be held annually for the next ten years. This was the first meeting.



A Scout evaluation vehicle gets a pre-flight check at Wallops Island Test Center. The flight last August 10 demonstrated a number of improved vehicle features developed for the Scout.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NOTE OF THANKS. . .A note from Dr. Smith J. DeFrance, Director of the Ames Research Center, has been received at the Center thanking his many friends and former associates for the memento sent to him on the occasion of his recent retirement from NASA.

ALUMNI MEETING. . .A joint meeting of the Tidewater-Richmond Alumni Clubs of the University of New Hampshire will be held on Wednesday, December 1 at the Holiday Inn, Richmond Road, Williamsburg. Guest speaker will be John W. McConnell, President of the University of New Hampshire. A social hour will be held at 7:30 p.m. followed by dinner at 8:15. For reservations call Sherman Clevenson, President of the Tidewater Chapter, at CH 5-1859 by November 23.

NEW HEIR. . .Weighing in at eight pounds, thirteen ounces on November 7 was Brian William, new son of Charles Knight, Instrument Research Division.

SINGLETON CLUB. . .An organizational meeting of the Singleton Club will be held at 5 p.m. on November 23 at the Activities Building. Included on the agenda will be the election of officers and plans for a Christmas dance. Dues will also be voted on and membership cards will be distributed for identification purposes. All interested are urged to attend. For additional information contact Sharon Huggett, Mail Stop 301.

ORANGE BLOSSOMS. . .Wedding bells will ring on November 27 when James W. Ramsey Jr., Research Models and Facilities Division, takes his final vows with Jane C. Griffith, Newport News, in Gastonia, North Carolina.

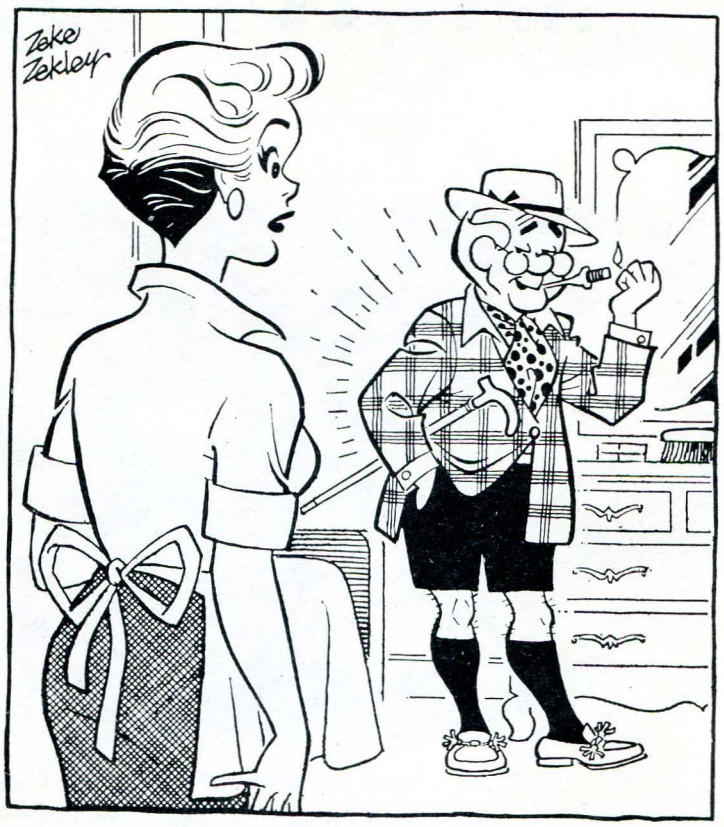
NOTICE. . .All graduates of the University of South Carolina are invited to attend a dutch-treat dinner-meeting on Friday, December 3 at 7 p.m. at the Ranch House Corral on Clyde Morris Boulevard. The purpose of the meeting will be to formulate plans for organizing a University of South Carolina Alumni Association on the Peninsula. Frank W. Johnson, former coach, will show a film. For reservations call Jim Fowke, 596-1445, or Ed Lanford, LY 6-6694.

FOR SALE: 1961 World Book Encyclopedia. R. F. Stalnaker, 877-2616.

WANTED: Driving combination from Colony Hilton Apts. to W.A. on 8 shift. Watson, 4705.

WANTED: Driving combination from Algonquin Rd. to W.A. on 7:30 shift. Gardapee, 4515.

Popsie by Zeke Zekley



" ... SOME OF MY SAVINGS BONDS MATURED !!"

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of November 22:

Monday - Puree of bean soup, half-pound chopped sirloin steak, veal scallopini, ham and noodle casserole, barbecued sandwich.

Tuesday - French onion soup, grilled steak, broiled ham, fried fish sticks, tomato-cheese rarebit on toast.

Wednesday - Thanksgiving dinner - 65¢ - tomato juice, waldorf salad, roast turkey, cornbread dressing, cranberry sauce, baked Virginia ham, candied yam patties, whipped potatoes, giblet gravy, spiced apples, buttered peas, bread, butter, coffee or tea, pumpkin pie or mince pie.

Thursday - HOLIDAY

Friday - Clam chowder, roast beef, knockwurst, broiled fish, fish sandwich.

The menu for the week of November 29 is as follows:

Monday - Vegetable-beef soup, pot roast of beef, grilled pork steak, chicken croquettes, baked hash.

Tuesday - Chicken-noodle soup, pepper steak, baked meat loaf, fried chicken, cheeseburger.

Wednesday - Cream of tomato soup, fried scallops, Polish sausage, liver and onions, Austrian ravioli.

Thursday - Tomato-barley soup, grilled steak, stuffed shrimp, chicken chow mein, tamale pie.

Friday - Clam chowder, half-dozen fried oysters, Salisbury steak, broiled fish, franks and beans.

FOR RENT: 3-bedroom house in Newmarket, fenced yard, available Dec. 1. Stowe, CH 4-7714.

GEMINI 7 LAUNCH SCHEDULED NO EARLIER THAN DECEMBER 4

NASA announced the launch of Gemini 7 - first of two launches in a combination long-duration mission and rendezvous of two manned Gemini spacecraft - is scheduled no earlier than December 4.

If preparation of launch facilities and checkout of launch vehicles and spacecraft proceed as presently planned, the launch of Gemini 6 will follow nine days later on Dec. 13.

Astronauts Frank Borman and James A. Lovell Jr. are command pilot and pilot for the Gemini 7 mission. It will be the first space flight for each. Astronauts Edward H. White and Michael Collins are the backup crewmen.

Walter M. Schirra is the command pilot of Gemini 6 and Thomas P. Stafford is the pilot. It will be the second space flight for Schirra. Astronauts Virgil I. Grissom and John W. Young are the backup pilots.

The Gemini 7 mission is scheduled for up to 14 days. The purpose of this flight is to further determine the effects of long duration flight on man. Twenty scientific, medical and technological experiments are scheduled to be carried out on the Gemini 7 mission.

The mission plans for Gemini 6 are nearly identical to those of the original rendezvous flight which was postponed October 25 when the Agena Target Vehicle failed to achieve orbit.

Gemini 6 will rendezvous with the Gemini 7 target spacecraft during the fourth revolution and station-keep with the Gemini 7 spacecraft for a period of time. Maximum duration of the Gemini 6 mission is two days. While the Gemini 6 spacecraft will approach within close proximity of the Gemini 7 spacecraft, it will not dock with it.

No major changes have been made in the Gemini 7 mission. The Gemini 6 mission will have no major impact on the accomplishment of Gemini 7 objectives. The Gemini 7 flight trajectory has been modified to provide support as a target for the Gemini 6 rendezvous mission.

The purpose of proceeding with the attempt to launch Gemini 6 is to demonstrate as early as possible a rendezvous of two vehicles in space.

MERIT PROMOTION PLAN

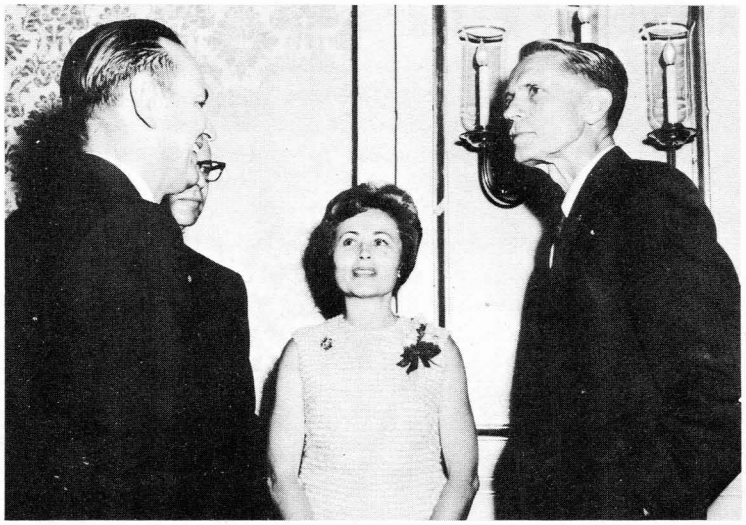
In accordance with the provisions of the Langley Merit Promotion Plan, it is desired to up-date lists of eligibles for Clerk-Typists and Clerk-Stenographers for future promotional opportunities under this program.

All Stenographers at the GS-3, GS-4 and GS-5 levels, and all Typists at the GS-2, GS-3, and GS-4 levels who meet the time-in-grade requirement for promotion and are interested in being considered for promotional opportunities other than those which occur within their own division, are invited to submit their names for the promotion roster by memorandum to John J. Cox, Employment Office, Mail Stop 307. Employees who have previously applied need not reapply.

When vacancies occur, selection will be made from a list of those best qualified for the particular position.

Employees who passed the Federal Service Entrance Examination after October 1960 and who are seeking promotional opportunities are also requested to contact Cox.

FOR SALE: 1957 Belair V-8, automatic transmission, radio and heater. Johnson, CH 4-3892 after 5 p.m.



Dr. Floyd L. Thompson (right), Langley Director, talks with Chris Kraft and his wife, Betty Anne, during the observance of Chris Kraft Day in Hampton on November 10. The full day ceremony was under the joint sponsorship of the City of Hampton and the Hampton Roads Jaycees. Kraft was employed at the Langley Center from 1944 to 1958.

TOUCH FOOTBALL LEAGUE

KNADS won the Touch Football League championship with a 7-1-1 record. The champs will play a post season game with the league all-stars tomorrow at 9:30 a.m. at Kecough-High School. Members of the all star squad are Kam Kersey, Jack Cooper and Dave McDougal, KNADS; Floyd Howard, Paul Jarvis, and Bob Tolson, Bombers; Ray Midden and George Lawrence, Boozers; Don Ward, Sixty-Niners; Allan Whitehead and Thayer Sheets, Packers, and Jerry Creedon, IRD. Runners-up Bob Evans, Ed Phillips, and Bill Brewer will round out the team in place of the three KNAD all stars.

Scores during the last four weeks were: KNADS 38 - Sixty-Niners 6, KNADS 25 - Bombers 13, Sixty-Niners 34 - IRD 19, Packers 41 - Redskins 6, IRD 14 - Redskins 0, Boozers 26 - KNADS 6, Bombers 21 - Sixty-Niners 12, Packers 40 - Redskins 18, KNADS 25 - Bombers 25, Boozers 45 - Sixty-Niners 12, and Packers 38 - IRD 27.

Team	W	L	T
UPPER DIVISION			
KNADS	7	1	1
Bombers	5	2	2
Boozers	5	2	2
Sixty-Niners	3	6	0
LOWER DIVISION			
Packers	4	4	0
IRD	3	4	1
Redskins	0	8	0

WANTED: Ride from East Hampton to W.A. on 8 shift. Sue Moyers, 4686.

WANTED: Fifth driver from Wythe area to E.A. on 8 shift. Edith Horrocks, 2614.

FOR RENT: 2-bedroom house near Southampton Shopping Center. Hughes, 877-3882.

WANTED: Ride from Lake Shore Apts. to W.A. on 8 shift, beginning Nov. 29. Andleton, 4835.

FOR SALE: Snow tires size 6.50 x 13, slightly used. Coe, CH 4-2695.

ASTRONAUT MAY DRIVE SATURN ROCKET

An astronaut may guide the giant Saturn V rocket when it boosts the Apollo spacecraft on its way to the moon.

A theoretical study made by NASA indicates that a man in the driver's seat would guide the big rocket better than a computer during the battering flight through the earth's atmosphere.

The study, made at Ames Research Center, shows that the astronaut, from his position in the spacecraft on the rocket's nose, could work controls to steer the mighty vehicle through the buffeting atmosphere to a safe parking orbit in space, ready to begin the long voyage to the moon.

In previous earth-orbital manned flights such as the Mercury-Atlas series and the Gemini-Titan flights, control of the launch vehicles was automatic. A control computer sent messages to the engine to stabilize it in early flight stages.

From launch to orbit, the astronauts were passive passengers on this part of the ride. (The command pilot could monitor and stop the flight by aborting it, but he could not control or guide it to orbit.)

Saturn's 365-foot length and relative slenderness make it particularly vulnerable to the wind jet streams that occur about 35,000 to 40,000 feet from the earth's surface.

Any disturbance to the back end of the Saturn, any turn or swivel, is transferred to the top or front end, building up into intense oscillations to which the Apollo crew would be exposed.

Without controls for stabilization, the Saturn with its Apollo spacecraft and passengers would tumble end over end faster and faster as it traveled into space.

Engineers at Matshall Space Flight Center sought to learn whether guidance by a man's hand would provide greater safety and reliability than a computer during this critical phase of flight.

The question was put to a team of engineers headed by Brent Creer, chief of the Manned Spacecraft Simulation Branch at Ames. Creer and research engineers Gordon Hardy and Richard Kerkowski found that man not only could withstand the stress of the atmospheric flight phase of the space ride but he could out-perform the computer.

Flight simulation tests showed that man provided flexibility and the ability to adapt to the unexpected, which even the best computer lacks.

The pilot, under severe stress, was able to reduce the loads the vehicle experienced from wind gusts and stabilize the rocket without any help from the automatic control system.

This means that the complex automatic flight system could be vastly reduced, thereby cutting the amount of equipment needed on board.

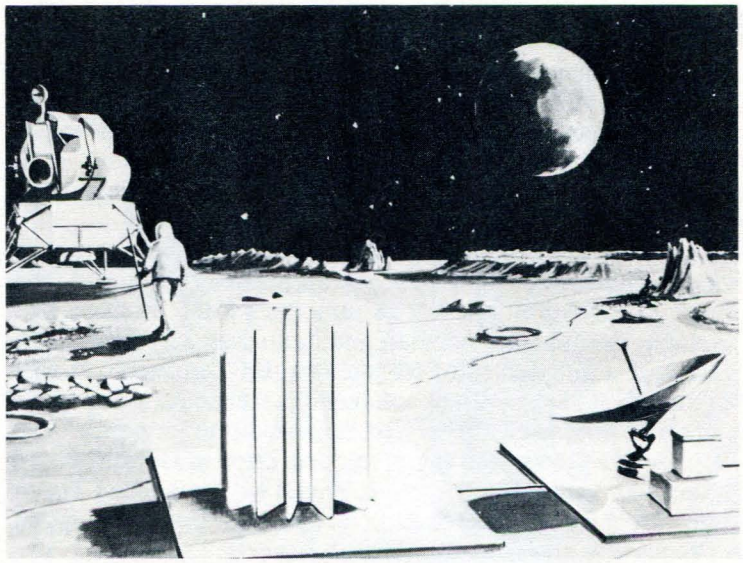
And by putting man in the driver's seat of the Saturn on the ride into space, NASA engineers would have reached the half-way mark in the development of man-driven reusable rockets for space missions. This would reduce the number and cost of rocket launch vehicles.

The development of man-driven boosters that can return from space also would enable astronauts to haul a manned or unmanned payload into space, discharge it there and then return to earth in the launch vehicle.

Creer said, "We are going in this direction. We are still at the stage where things look positive."

Hardy pointed out that, "With man in space in the driver's seat, we can choose our landing sites to bring the vehicle back and also provide the capability to make horizontal landings which may be difficult for an automatic system to accomplish."

Kerkowski added, "One of the prime advantages of man on board is that he can make the on-the-spot decision which at this point in computer development you could not trust an automatic computer to make. Man still is the best computer we have."



NUCLEAR POWER ON THE MOON - Artist's concept of a nuclear power device (center) that is being developed for use on the moon by NASA. The pack would supply power for NASA's Apollo Lunar Surface Experiments Packages program. The packages, one of which is depicted in the drawing, contain special experiments and would be deposited on the moon by astronauts.

IOWA STATE GETS INJUN CONTRACT

NASA has awarded a contract to the State University of Iowa for preparation of an Injun spacecraft to be used in a dual satellite launch in 1967.

The Injun Explorer will be teamed with a 12-foot inflatable Air Density Explorer and flown on a single Scout launch vehicle in the same way as Explorers XXIV and XXV were orbited November 21, 1964.

Langley Research Center is managing the project under the general direction of NASA's Office of Space Science and Applications.

The contract with the State University of Iowa is valued at $1,070,488 and covers construction of the Injun spacecraft, the preparation and integration of the on-board experiments, and integration with the Air Density Explorer spacecraft as a single Scout payload. Dr. James A. Van Allen of Iowa State is the principal scientific investigator.

Langley is responsible for overall management of the program, for final integration of the two spacecraft into a single payload, and for the Scout launch vehicle. Total payload weight will be about 150 pounds.

WANTED: Ride from Newmarket to E.A. on 8 shift. Holt, 2651.

FOR RENT: 2-bedroom house on Bay Ave., also 2-bedroom upstairs apartment at 119 Pochin Place. Simmonds, PA 2-0088.

TURKEY SHOOT WINNERS NAMED

A total of 113 turkeys were won at the Activities Association's annual Thanksgiving Turkey Shoot. The turkeys are Grade A Rockinghams and weigh between 10 and 12 pounds. Winners may pick up the turkeys after 3:30 p.m. on Tuesday, November 23 at the Activities Building. Winners are requested to bring their stubs along for identification. The turkeys must be picked up on November 23 because the Activities Building is not equipped to store them.

Sharpshooters who won in the matches were as follows: L. Neal, S. Plaster, J. Plaster, R. Williams, R. Boyden, L. E. Wilkinson, D. Smith, W. Boyer, R. T. Siler (2 turkeys), H. Strader (2 turkeys), Hamilton Hughes, M. Birdsong (2 turkeys), C. Walker, R. Speigh (2), F. Hines, Harold Robertson, A. Murphy, Dan Crawford, O. D. Nelson (2), E. R. Ward, R. C. Redman, D. Stump, and H. Johnson.

Winners in the drawing were as follows: Mary Mesic, W. T. Pickrell, Doris Eggleston, Charles Stump, Sandy Ray, C. S. Bryant, Jim Pleasants, Tom Vranas, Hubert Battle, V. D. Howell, C. E. Byvik, G. L. Davis, Edgar Kastelberg, J. W. Speegle (2), J. M. LaPrade, J. Paul, T. J. Kurtyka, George Pere, F. Bristow, J. W. Lynch, Dolly Seward, M. W. Birdsong, R. E. Williams, Lorraine Walls (2), W. A. Fleet, L. A. Warren, Evelyn Martin, B. Joyner, R. Goering, R. H. Edwards, D. R. Woodward, M. T. Satterfield, T. Bonner, J. C. Patterson, Walter Cook.

W. C. Nettles, E. J. Roberts, Don Marcum (volunteer help winner), Carl Horne, Bruce Amole, Ray Goodman, Lloyd Harrold, Carl Horne, Ira Tate, Lois Hartmangruber, R. E. Olson, B. Williams, G. A. Gates, Ray Vogler, R. R. Long (2), R. W. Weade, C. E. Barr, Richard Byrd, C. F. Gardner, T. Brooks, W. M. Mayes, Robert Smock, J. Covington, C. J. Chamberlin, Tommy Toll, S. E. Sterling, George Cluverius, W. Ferguson, Jim Brabrand, Linda Edwards, L. Imig, E. F. Smith, D. E. Terray, C. Cockrell, Frances Rose, Joe Nolan, Joyce Sandifer, K. F. Test, R. K. Crouch, Patrick Seabolt, C. Johnson, Roslyn Caldwell, M. C. Roberts, A. Milton, H. A. Brandt, and James F. Pierce.

In the drawing for the district representative who sold two or more books of tickets the winner was Marguerite Williams.

The Activities Association expressed its thanks to all the volunteer workers who helped during the shoot and especially to Harold Crate who was in charge of the shoot.

NASA TO NEGOTIATE WITH LTV

(Continued from page 1)

ceive a subcontract for various reaction control and hydrogen peroxide systems; and Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., for guidance system packages. Numerous subcontractors throughout the country will be furnishing other specialized Scout components and subsystems.

Scout is a multi-stage launch vehicle using four solid propellant rocket motors capable of carrying payloads of various sizes on orbital, space probe or reentry missions. It can loft a 320-pound satellite into a 300-mile orbit or carry a 50-pound scientific package approximately 11,000 miles away from the earth.

The Scout Project was initiated in late 1958 to develop an inexpensive, reliable solid-propellant rocket vehicle for use as a satellite launcher and research vehicle. The first Scout vehicle was launched from Wallops Island in July 1961. Thirty-seven NASA and Department of Defense Scout vehicles have been launched.

The Scout is 72 feet long and weighs 20 tons at lift-off. Launching sites are operational on both coasts of the United States for either East-West or Polar orbit launches.

NASA BOWLING LEAGUE

Hampton Scientific leads Group A in the NASA Tenpin League with an enviable record of 31.5 wins and 4.5 losses. The closest teams to the leaders are Alley Cats and Filter Queen with 21 wins and 15 losses each. Top scores for the week were rolled by Bruce Earnhardt with a 250 game and 592 set and Bill Beasley with a 592 set.

Strikeouts lead Group B with 29.5 wins and 6.5 losses. West Gate Grill is in second with 24 wins and 12 losses. High scoring honors went to Charles Hubbard with a 240 game and 672 set.

HMS leads Group C with 26 wins and 10 losses. ACD and Greenhorns are tied for second with 23 wins and 13 losses each. Top bowlers were Don Shortt with a 235 game, Dave Block with a 601 set and Janice Phelps with a 221 game and 612 set.

GROUP A

Hampton Scient.	31.5	4.5	Phantoms	18.5	17.5
Alley Cats	21	15	Hornets	16.5	19.5
Filter Queen	21	15	Unitary	12	24
Flyers	20	16	Odd Balls	11.5	24.5
Mexicali	19	17	Short Circuits	9	27

GROUP B			GROUP C		
Strikeouts	29.5	6.5	HMS	26	10
West Gate Grill	24	12	ACD	23	13
Misfits	21	15	Greenhorns	23	13
Question Marks	20	16	Trackers	21	15
Southeastern Tile	20	16	Latecomers	20	16
Cee Pees	19	17	RPM	20	16
Hampton Scient.	18	18	Mets	19	17
Flight	17	19	Sparkys	19	17
Galaxies	17	19	Dillys	18	18
A-OK's	17	19	C-Scouts	16	20
Payloads	15	21	Gliders	15	21
Flight Eng.	15	21	Bowling Belles	13	23
Analogs	11	25	Chargers	10	26
Pinwigglers	8.5	27.5	Hits and Misses	9	27

AUCTION SALE: A repossessed 1961 2-door Ford Galaxie Sunliner convertible. Converted to floor shift. Engine recently overhauled, new paint, tires, and battery. This car will be sold by the Credit Union to the highest bidder at an auction to be held at 2 p.m. today on the south side of the Gate House, Gate 4, NASA West Area.

WANTED: Driving combination from Yeardley Dr. to W.A. on 8 shift. Anderson, 4650.

FOR SALE: 3-bedroom, 1-1/2-bath brick rancher in Forest Park - $750 down. Hollinger, 826-4580.

FOR SALE: Air Force blue uniforms size 40R, gabardine - $10, elastique - $15, all year - $10, gabardine trench cost - $10. Croom, 877-2703.

FOR SALE: Brown tweed studio couch, sleeps two - $30. Drake, 596-6414.

FOR SALE: Sailfish sailboat, all fiberglas - $275. Ballard, 723-1571.

THE LAND OF NO DAY OR NIGHT

An astronaut in orbit around the earth is exposed to a total of 16 sunrises and 16 sunsets every 24 hours instead of the single light-dark cycle of day and night that charactizes a day on earth.

But in traveling out to the moon or to another planet, there are no sunrises or sunsets - just continuing glaring light. The earth day vanishes.

What the disappearance of the day means to an astronaut concerns NASA. For man's entire physiological responses, the full range of his activities, are synchronized to this 24-hour cycle by means of built-in responses - biological clocks or rhythms. Any major shift in the light-dark pattern of the cycle, such as is found in space, results in desynchronization of these rhythms.

The effects are fatigue and reduced mental alertness.

NASA scientists are trying to uncover the body mechanisms that control biological rhythms.

Dr. Charles Winget, NASA physiologist, feels that the astronaut in space probably will be able to synchronize his biological clocks to some measure of time within the spacecraft and will be able to perform in space at maximum efficiency. However, this adjustment will not assure an easy return to earth and its 24-hour day-night cycle.

"If his biological rhythms become desynchronized in the return to earth, the experience of reentry could be very discomforting and even dangerous." Dr. Winget said. "For even in the environment of earth, within the normal functioning of the biological rhythms to the 24-hour single cycle of light and darkness, there are points or periods of dangerously low resistance to stress."

For example, in cases of infection, complicated by a rise in body temperature, it is a medical fact that the amount of temperature elevation is greater and patients tend to be sicker at night.

But biological rhythms are more than a matter of sickness and health. They can be a matter of life and death. Studies indicate that there may be a definite correlation between the fatality of a disease and the time in the 24-hour cycle it enters the body.

In one such study, the same dose of a certain bacteria was given at different periods of light and darkness in the 24-hour cycle to groups of rats of the same age and vigor.

Those infected at the twilight period of light (just before it begins to fade into darkness) had 50 percent deaths. The group infected shortly after the onset of darkness had 95 percent fatalities. Those exposed to infection at the earliest light phase (dawn) had only 5 percent of deaths.

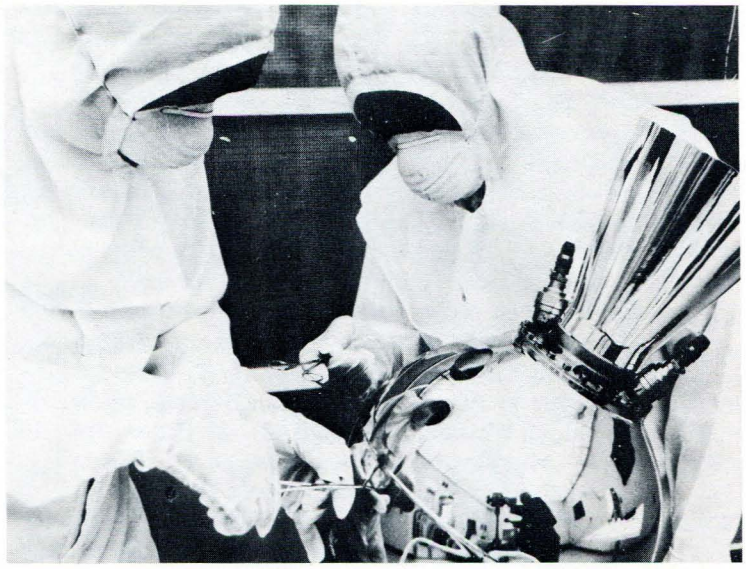
Extrapolated to man, this apparent variation in biological rhythms with the ebb and flow of resistance to stress in the 24-hour "day" could mean great danger to the astronaut from the stress of reentry at one particular period.

If this period can be predetermined, it may be possible to eliminate the danger chemically by means of drugs, and thereby change the biological rhythm.

And, once unlocked by the space scientists, the mystery of biological rhythms holds a promise for man's mental and physical well-being on earth as well as in space.

WANTED: Ride from Northampton to W.A. on 8 shift. Patching, 3398.

FOR SALE: 3-bedroom, 1-1/2 bath brick rancher in Riverdale. Moose, 838-1776 after 4 p.m.



Hooded and masked technicians are going about their business in the nation's first fully operational "clean room" for spacecraft. The room, designed to insure that potential moon-landing craft will be decontaminated, was recently completed at Goddard Space Flight Center. The first spacecraft to be decontaminated in the room was NASA's Anchored Interplanetary Monitoring Platform which will orbit the moon and then impact it due to the lunar gravitational pull. When it impacts, scientists want to be sure that earth bacteria are at a minimum so as not to contaminate the lunar surface.

BRADLEY NAMED CONSULTANT

General Mark E. Bradley, USAF (Ret.), former commanding general of the Air Force Logistics Command, has been appointed a consultant to NASA Administrator James E. Webb. He will advise Webb on management matters and evaluate contributions of NASA resources to supersonic transport development and aeronautical research programs.

A native of Clemson, South Carolina, General Bradley, 57, was graduated from the United States Military Academy at West Point and completed pilot training immediately thereafter.

During World War II he served in Europe, the Philippines and Okinawa, after which he was assigned to the Air Force Materiel Command at Wright-Patterson Air Force Base, Ohio. Subsequently, he served as deputy commander in chief and chief of staff of U.S. Air Forces in Europe and returned to Wright-Patterson in 1958.

In 1962 he was named commander, Air Force Logistics Command, at Wright-Patterson where he remained until his retirement on July 31. His decorations include the Distinguished Service Medal, Legion of Merit and the Air Medal.

FOR RENT: 2-story, 3-bedroom house at 143 Wythe Parkway - $130 per month. Diacont, LY 6-3292.

FOR SALE: 1964 RCA color TV consolette. Bowen, 851-1418.

WANTED: Driving combination from Adams Dr. to E.A. on 8 shift. Batten, 2691.

FOR SALE: 1965 14-foot Star Craft boat with 35 hp Mercury motor and tilt-trailer, assume payments. Hobbs, 596-1886 after 5 p.m.

KNOW YOUR CREDIT UNION

Don Davis asks a provocative question: "Can and should the Langley Federal Credit Union obtain insurance for the shares of depositors?" Actually, the Credit Union does not have the freedom of choice indicated. There is presently no agency which could or would provide coverage for acceptable premium. So the answer to "can" is "No;" and the answer to "should" is academic. However, that is far from the end of the matter. Davis picked a live one when he introduced the subject of share insurance.

Historically, the Federal Bureau of Credit Unions has never felt a need for a bank-type deposit insurance and the Credit Union National Association has always been opposed to it. The concensus was that the failure rate was so low and the recovery rate so high that the cost of insurance was not justified. Statistics released in connection with the 30th anniversary of federal credit unions show that 80 percent of all forced liquidations paid-off at $1.07 on the dollar. The other 20 percent did suffer some loss but the average was only $11.48 per member.

Sentiment for share insurance, however, has been increasing noticeably in the last year or so - particularly outside the movement as in the halls of Congress. So great has the pressure become that CUNA has drafted a proposed act to be submitted to Congress in the event CUNA is "faced with a demand for share insurance." The act, if passed, would provide for an entirely separate Federal Credit Union Share Insurance Corporation with the primary function of insuring credit unions in amounts not to exceed $10,000 for each insured member. All federal credit unions would be required to join. Initial financing would come from the purchase of shares of stock by member credit unions and a U.S. Government loan.

Shares would be purchased in amounts equal to 1-1/4 percent of each credit union's insured accounts. At Langley, that would amount to $63,750 at the present time. Of course, at the end of prescribed intervals, an increase in insured accounts would be met by the purchase of additional stock. Then there would be an annual premium for the insurance provided. The rate set is 1/8 of 1 percent of insured accounts. Again at Langley, that would amount to $6,375 for the first year.

So that is where matters stand. The writing is on the wall. Members who feel strongly, either way, may write the Credit Union, NASA Mail Stop 184, Langley Air Force Base, Virginia. Their letters will provide guidance for the Directors in deciding on which side to throw the influence of the Langley Credit Union.

FOR SALE: 8 steel venetian blinds size 33 inches wide and 54 inches long - $1.50 each, also paperback mystery books, 15¢ each. Saunders, 722-5550.

WANTED: Home for kittens. Conway, 826-7730.

FOR SALE: 1958 Atlas mobile home, 10 x 43 feet with 20 ft. aluminum room, air conditioned. Tillett, 868-6195.

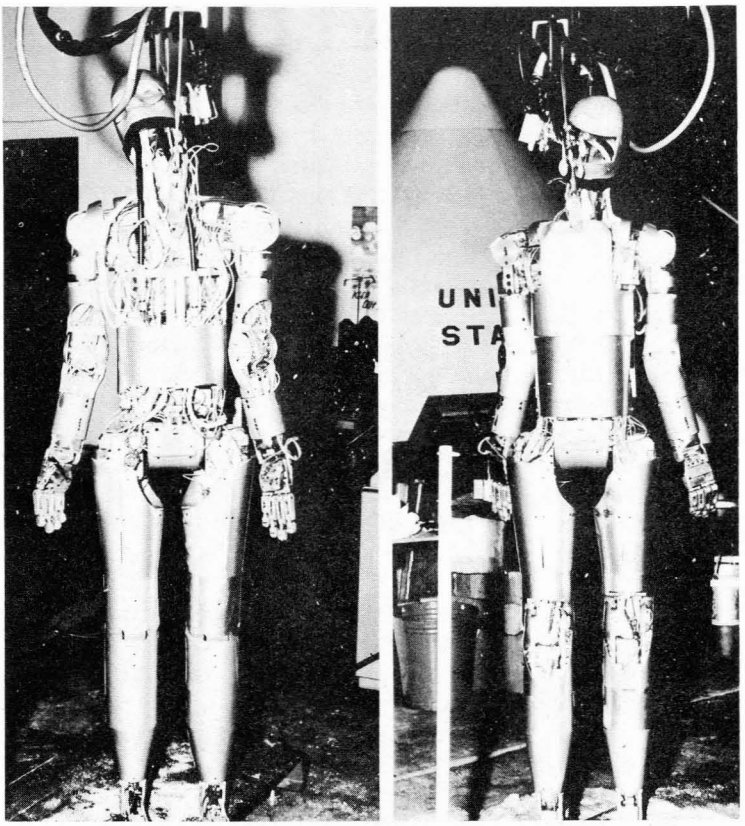
FOR SALE: 3-bedroom brick rancher with 1-1/2 baths and garage. Martin, 868-9484.

FOR SALE: 1957 Chevrolet V-8. Bryant, LY5-0819.

FOR SALE: 1966 Volkswagon Model 1300, radio, heater, 3,500 miles - $1695. Oertel, Williamsburg 229-6842.

FOR SALE: 1.6-acre wooded lot at Queens Lake. Witcofski, Williamsburg 229-2031.

FOR SALE: 1965 Pontiac Lemans. Petway, 723-6473.



A robot capable of simulating 35 human motions is helping NASA engineers and designers to evaluate space suit mobility at the Manned Spacecraft Center. Left photo shows the rear view and the right photo shows the front view.

LANGLEY ARTICLES IN HANDBOOK

Ten articles by Langley staff members have been published in the Technology Handbook entitled "Selected Shop Techniques." The handbook is published by the NASA Technology Utilization Division and copies are available at the Langley Technology Utilization Office, telephone 3281.

The following Langley articles are published in the handbook:

"Minature Vibration Isolator" by David H. Butler and Wilbert C. Falk, both of Flight Vehicles and Systems Division, "A One-Time Shock Absorber With Low Rebound Made from Breakable Metal Tubes" by John R. McGehee, Structures Research Division, "Construction of Wind Tunnel Models" by the Langley Modelmaking Branch, "Test Plug" by Albert G. Willis, Research Models and Facilities Division, "Modified Spray Gun to Eliminate Quick-Hardening Problems in Plastic Sprays" by Oce W. Johnson, Mechanical Service Division, "Flexible Fastener to Allow Thermal Expansion" by Weymouth B. Crumpler, Research Models and Facilities, "Quick-Release Mechanism" by James W. Mayo, Flight Vehicles and Systems, "Safety Pipette for Use With Hazardous or Toxic Fluids" by Dwight G. McSmith, Mechanical Service, "Economical and Reliable Thermocouple Lead Connector" by Howard B. Miller, Mechanical Service, and "Buckle to Join Web Straps Quickly, Adjust Easily" by James E. Wilkinson, Chance Vought Corp., under NASA Contract with T. N. Bartron, Flight Vehicles and Systems, as technical representative.

WANTED: Ride or driving combination from River Drive Apts. to W.A. on 8 shift. Branum, 4487.

NASA POLICIES EXPLAINED

1. Employees may not have any outside activities or interests which may interfere or conflict with the performance of their duties or might reasonably be expected to result in a conflict of interest which would tend to prevent them from exercising impartial judgment on behalf of NASA.

2. Employees may not have any outside activities which may tend to result in discredit or embarrassment to NASA.

3. Employees may not have any outside activities or interests which may appear to involve unethical capitalization of their official positions or of information or resources to which they have access by reason of their employment by the Government.

4. Employees may not receive any salary from non-governmental sources for their service to the Government.

5. Employees may not receive gratuities from or become obligated to any one with whom they may have official relationships or who may be affected by their performance of duty.

6. Employees must disqualify themselves from handling or attempting to influence in any way any matter which affects chiefly any private person or organization (a) with whom they have a substantial economic interest, or (b) with whom they have arranged or are negotiating for subsequent employment or business relations, except by prior written authorization.

7. Employees may not divulge any restricted information to any unauthorized person; release any information in advance of the time prescribed for its authorized issuance; or make use of, or permit others to make use of, any information for private purposes on a basis of advantage not available to the general public.

8. Employees may buy stocks and bonds for bona fide investment purposes providing they do not buy or sell such securities as a result of or on the basis of information derived from their official position or from the official position of other NASA employees with whom they associate.

9. Employees may not utilize Government time or resources except for official business or NASA approved or sponsored activities.

10. Employees may not represent any non-governmental interest in any matter which involves any case or matter about which they have acquired knowledge, or have taken, or may take action, in connection with their official duties.

11. Employees may not do indirectly (by, through, or with other persons) what they may not do directly under the foregoing rules.

Questions regarding the above regulations should be directed to the Personnel Officer.

FOR RENT: 3-bedroom brick rancher near Langley and schools - $129 per month. Hanson, PA 3-3406.

FOR SALE: Getzer cornet, Evans, 868-9054 after 4 p.m.

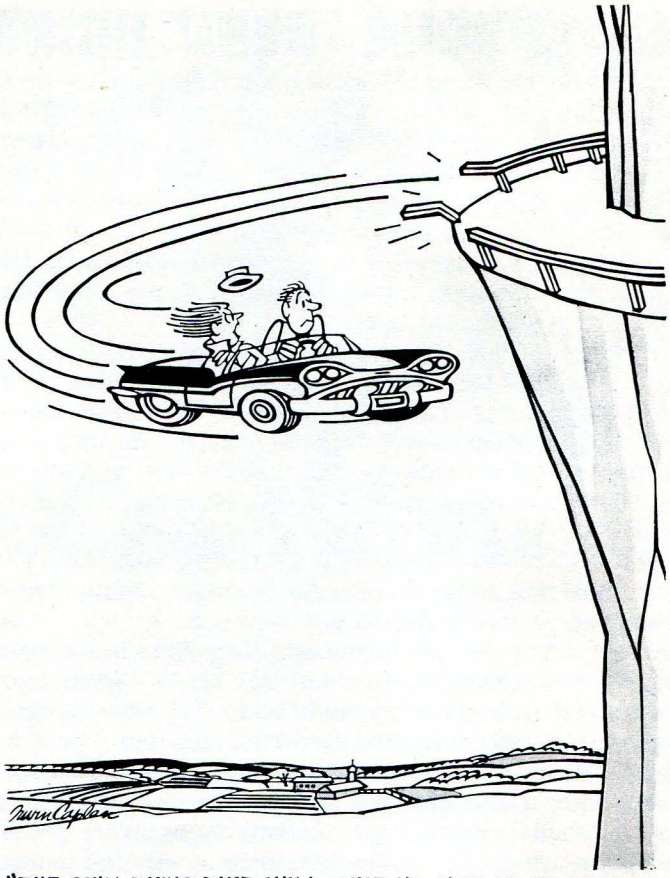
FOR SALE: Blonde maple youth bedroom suite - twin youth beds with mattresses, night stand, chest of drawers, and dresser, Cyrus, LY 6-0646.

FOR SALE: AKC registered Collie pups - males $75, females $50. Watkins, 868-9243 after 4 p.m.

WANTED: Ride or driving combination from Warwick Mobile Home Estates to E.A. on 8 shift. Richards, 2512.

FOR SALE: 5-foot pool table - $30. Elder, LY 5-0889.

WANTED: Alternate drivers from Roanoke Ave. and Whealton Rd. to W.A. on 8 shift. Ashe, 4753, or Hobson, 3330.



"THE ONLY THING THAT WILL SAVE US NOW IS IF YOU WERE GOING FAST ENOUGH TO PUT US IN ORBIT."

MEETING FEATURES PANEL DISCUSSION

Interested employees are reminded that the Hampton Roads Section of the American Helicopter Society will have a panel discussion on "Where is V/STOL Heading?" at its meeting on November 23 in the Warwick Room, Fort Eustis Officers Open Mess.

Members of the panel will be as follows: John Campbell, Associate Chief of Flight Mechanics and Technology Division, panel moderator; Harold Andrews, Bureau of Naval Weapons; Joan Barriage, FAA; Paul Carpenter, USAAML, and George E. Dausman, USAF.

The meeting will be preceded by a social hour at 6:30 p.m., followed by dinner at 7:30 and the meeting at 8:30. For reservations call one of the following by noon on Monday, November 22: Larry Jenkins, NASA 4505 or 4584, or Davis Chestnut, 878-3104.

IEEE DINNER-DANCE TONIGHT

The Hampton Roads Section of the Institute of Electrical and Electronics Engineers will hold its annual dinner-dance tonight at the Holiday Inn on Mercury Boulevard.

Guest speaker will be State Senator Fred W. Bateman who currently represents the 27th Senatorial District, Newport News.

A social hour will be held at 6:30 p.m., followed by dinner at 7:30 and the business meeting at 8:30. Dancing to music by The Lyrics will take place from 9:30 until 12:30 a.m. Admission will be $4 per person or $8 per couple. The cost includes the social hour, dinner and setups for the dance.

FOR SALE: 1956 Plymouth. Boyle, PA 3-3400.

Langley Researcher

VOLUME 4, NUMBER 23 LANGLEY RESEARCH CENTER DECEMBER 3, 1965

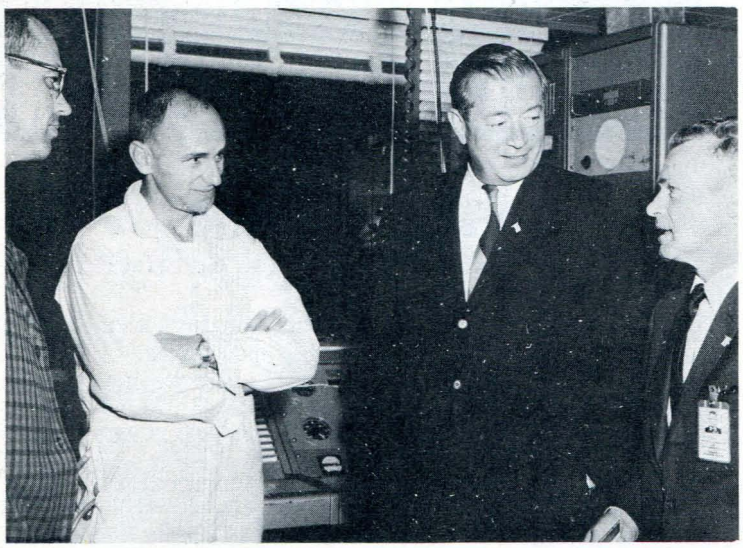
GEN. WENGER AND STAFF INSPECT INTEGRATED LIFE SUPPORT SYSTEM

Major General Don S. Wenger, Deputy Chief of Staff, Bioastronautics and Medicine, Air Force Systems Command, his deputy Colonel P. G. Keil, and Colonel B. E. Flaherty, Director of Professional Services, visited the Langley Center on November 23 to become acquainted with some of the work in progress at Langley in the life-support areas and to inspect the Integrated Life Support System. In his present position, General Wenger is also Chief of Bioastronautics for the USAF Manned Orbital Laboratory. They were accompanied by Lt. Col. L. D. Good who is with the Flight Support Group.

The visitors were met at the Langley Hangar by Peter F. Korycinski, Office of the Associate Director, and Dr. Jim Scow, Dr. Rayford T. Saucer, and James B. Whitten, Space Mechanics Division.

Charles J. Donlan, Associate Director, welcomed the General and members of his staff and outlined Langley's mission, manpower distribution, and technical end objectives, emphasizing the role of Langley in the life-support area. Dr. John E. Duberg, Assistant Director, follow-

(Continued on page 8)



Representative Thomas N. Downing of Newport News, a member of the House Committee on Science and Astronautics, is shown in the control room of the Lunar Landing Research Facility at the Langley Center. With Representative Downing, the Congressman from Virginia's first district, is Charles J. Donlan (right), Langley's Associate Director; Donald E. Hewes (left), Head of the Spacecraft Research Branch, Space Mechanics Division, and Astronaut Alan L. Bean, Manned Spacecraft Center. Bean is one of several NASA astronauts who visit Langley periodically to work with the Center's scientists and research pilots in the operation of the Lunar Landing Research Facility and other space simulators.

CHILDREN'S ANNUAL CHRISTMAS PARTY SCHEDULED DECEMBER 12

A special attraction at the Children's Annual Christmas Party will be Nancy Woodard (above) and Ann Penington with "The Pussy Cat Puppets."

The Activities Association's Annual Children's Christmas Party will be held on Sunday, December 12 at the Activities Building.

Two shows are scheduled this year with the first one starting at 1:30 p.m. and the second one planned for 3:15.

Featured on the program will be Nancy Woodard and Ann Penington with "The Pussy Cat Puppets."

Santa Claus is making a special trip from the North Pole to visit the party and take all orders back to his workshop.

Tickets are twenty-five cents each and they must be purchased in advance from District Representatives to the General Assembly. Adults must also have tickets in order to be admitted to the building.

HEALTH PLAN CHANGES

Minor benefit changes will be made in many of the health benefit plans and some will increase their premium rates for the contract term which begins in January 1966.

To inform each employee of the changes, if any, in his plan, the Civil Service Commission has prepared pamphlet BRI 41-117, entitled Information About Plan Changes Effective January 1966, which will be distributed to all employees around the end of the year. Each employee is urged to check the information in the pamphlet regarding his plan to see if it has any changes, and, if so, in what respect.

If the rates of the plan are being increased, the effective date for the increased deductions from salaries will be January 2, 1966. Rate increases are needed in some plans primarily because of increasing costs of medical care and higher utilization of medical services by employees and their family members.

The next open season for changing enrollment has not been scheduled. It will be announced and held before February 15, 1968.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, Building 587, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEW ARRIVALS. . .Announcing the birth of a nine pound, twelve ounce son, Michael Eugene, on November 17 is Michael Hudson, Structures Research Division. . .Weighing in at seven pounds, seven ounces on October 27 was Alicia Ann, new daughter of Douglas M. Whipple, Electrical Systems Division.

REPRESENTATIVES TO VISIT HERE. . .Rollin Slinger, Field Representative of the Indemnity Benefit Plan, will visit the Center on December 14 from 3 p.m. until 4 p.m. Mrs. Beverly Beale, Government-wide Service Plan representative, will be here on December 15 from 2 p.m. until 3 p.m. Employees having problems or questions concerning either plan may call Lois Taylor, 2523, for an appointment.

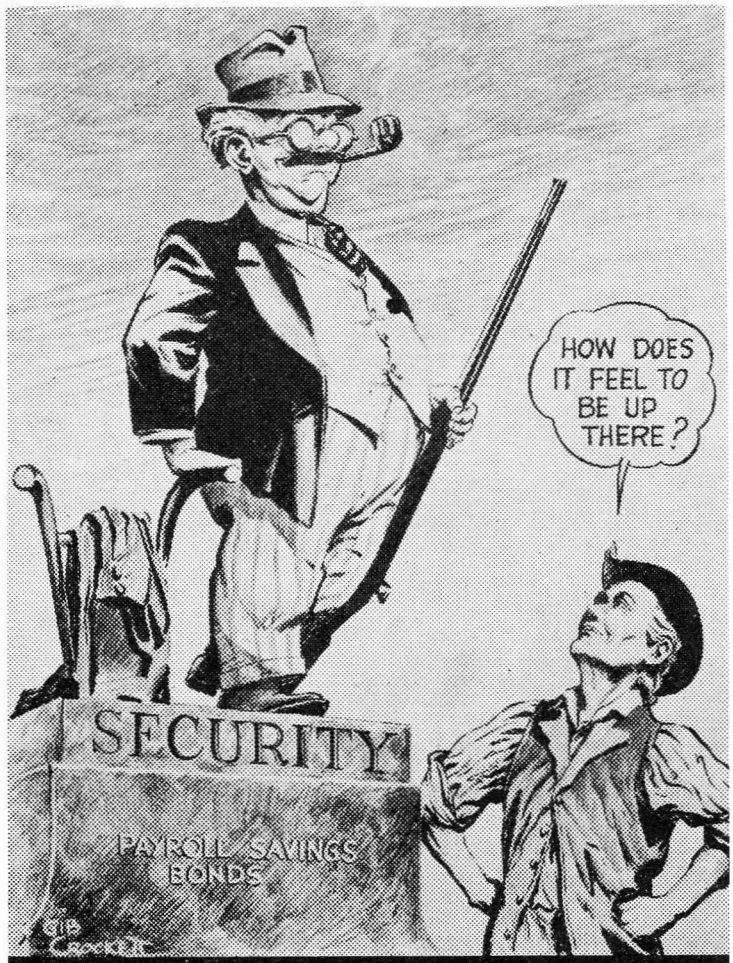
WEDDING PLANS. . .Making plans to desert the bachelor ranks is Mack G. Lawrence, Instrument Construction Shop. He is engaged to Betty Burke, Hampton, and no definite date for the wedding has been announced.

IAM MEETING NOTICE. . .The NASA Lodge No. 892, International Association of Machinists, will hold its monthly meeting on Tuesday, December 7 at 7 p.m. at the Central Labor Union Hall, Newport News.

NEWLY WEDS. . .Ann Hill, Administrative Service Division, and William T. Suit, Space Mechanics Division, took their final vows on Saturday, November 27 at the First Methodist Church in Hampton. Joan Hixon, Kennedy Space Center, was maid-of-honor.

BLOODMOBILE. . .The Red Cross Bloodmobile will make its final visit for 1965 to the Center on December 8. Additional donors are needed to help meet the Center's quota. Those who have not registered to donate blood and wish to do so may call East Dispensary, telephone 2243.

FOR SALE: Beagles. Johnson, 826-4547.
WANTED: 110-pound bar bell set. Lawson, 851-1500 after 5:30 p.m.
WANTED: Alternate drivers from Glen Garden Apts. and G.E.X. area to W.A. on 8 shift. Arrington, 4705.
WANTED: Driving combination from Findley Square to W.A. on 7:30 shift. Agnew, 4515.
WANTED: Driving combination from Deep Creek Rd. to W.A. on 7 shift. Whipple, 4587.
FOR SALE: 1963 Chevrolet Super-Sport, automatic on floor, power steering and brakes. Campbell, 723-1024.



THROUGH THE
PAYROLL SAVINGS PLAN

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of December 6:

Monday - Cream of potato soup, braised short ribs of beef, grilled Canadian bacon, clam croquettes.

Tuesday - Puree of bean soup, baked Smithfield ham, shrimp gumbo, fried chicken, hot dog.

Wednesday - Split green pea soup, roast ribs of beef, grilled pork chops, spaghetti with meat sauce, fish cakes.

Thursday - Chicken-vegetable soup, grilled steak, chicken shortcake, ham-macaroni casserole, barbecued sandwich.

Friday - Clam chowder, corned brisket of beef, fried flounder, broiled halibut steak, beef hash.

The menu for the week of December 13 is as follows:

Monday - Vegetable-beef soup, Spanish pot roast, chicken pie, grilled ham slice, tuna-noodle casserole.

Tuesday - Cream of tomato soup, breaded veal cutlet, smoked pork sausage, liver and onions, chili con carne.

Wednesday - Minestrone soup, Swiss steak, stuffed flounder, chicken chow mein, grilled cheese sandwich.

Thursday - Vegetable-beef soup, grilled steak, roast fresh ham, fried chicken wieners and sauerkraut.

Friday - Clam chowder, roast beef, shrimp-crab meat Newberg, fried flounder, hamburger.

EXPLORER XXIII ACCOMPLISHES MISSION

NASA announced that the Explorer XXIII spacecraft, designed to gather data on meteoroid penetration rates near Earth, has successfully completed the one-year lifetime for which it was designed.

Explorer XXIII was developed by Langley Research Center. The meteoroid technology satellite program is under the NASA Office of Advanced Research and Technology.

The 295-pound satellite, launched from Wallops Island on November 6, 1964, carries detectors to measure the rate at which the spacecraft is penetrated by meteoroids at altitudes ranging from 300 to 600 miles above the Earth. As of September 30, the satellite had reported 122 punctures by meteoroids in stainless steel sensors of two different thicknesses.

The results obtained, with other data from its predecessor meteoroid satellite the Explorer XVI, have established with good confidence the penetration frequency in very thin spacecraft materials. The results indicate that a spacecraft with an exposed area of 10 square feet made up of metal one-thousandth of an inch thich would experience penetration by a meteoroid about once a week.

The information from Explorers XVI and XXIII and the three large Pegasus meteoroid detection satellites will be studied by the designers of spacecraft intended to operate for long periods of time in the near-Earth environment.

NASA RECEIVES FLYING LABORATORY

NASA's Flight Research Center has received a flying laboratory that will be used to provide airborne simulation of advanced aircraft with particular emphasis on the proposed supersonic transport.

Called the General Purpose Airborne Simulator (GPAS), the new system will allow NASA engineers and pilots to evaluate specific future aircraft designs in a wide variety of actual flight conditions. Airborne simulation is more desirable than ground simulation because the pilot is provided with motion and visual cues from actual flight.

A Lockheed JetStar, capable of flight at speeds in excess of 550 miles per hour and at altitudes up to 40,000 feet, has been modified by the Cornell Aeronautical Laboratory, Buffalo, New York, with an improved variable stability control system, an airborne analog computer, and a data acquisition system. Cornell performed the modifications under a 1.3 million dollar contract with NASA.

The system utilizes a new variable stability technique called "model control." Under this technique, the equations of motion of the simulated aircraft are programmed on the analog computer. The computer then, after receiving flight control inputs from the JetStar test pilot, sends commands to the JetStar controls which make the JetStar fly like the simulated aircraft.

GPAS can simulate pitch, yaw, roll and forward velocity movement. In addition to duplicating the motion of the aircraft under simulation, the system gives the pilot the actual feel of the simulated aircraft's controls. This allows the simulation of several different control configurations on the same simulated aircraft.

The GPAS will normally carry a test pilot, safety pilot, flight test engineer and two flight test observers.

FOR SALE: 1961 World Book Encyclopedia. Lindler, 229-5799.

Dr. Floyd L. Thompson (top photograph), Director of the Langley Research Center, is shown delivering the keynote address at the four-day International Congress on Air Technology held at Hot Springs, Arkansas. As the principal representative of NASA, Dr. Thompson spoke on "Advances in Aircraft Technology." An exhibit (lower photographs) of research models and photographs prepared by Langley and illustrating NASA aeronautical research in the subsonic, supersonic, and hypersonic speed ranged was a feature of the air congress, which was attended by aeronautical experts of the United States and several foreign countries.

EXERCISE DEVICE SEEN USEFUL

Crewmen of spacecraft on missions lasting weeks or months could help keep in good physical shape by use of a simple exercise device weighing only 1-1/2 pounds, officials of Lockheed Missiles and Space Company revealed.

Furthermore, physicians on Earth could keep track of the astronauts' muscular condition through reading signals relayed from the instrumented exercise machine, says Dr. John E. Mangelsdorf, Human Performance project leader in the company's Bioastronautics Laboratory.

Known as an "Exer-Genie," the device consists of a small metal cylinder through which a nylon line is pulled. Convenient wooden handles or stirrups are attached to the ends of the line, and the force required to pull the line through the cylinder can be varied from zero to 400 pounds by rotating the outer sleeve of the cylinder.

The Exer-Genie would be attached to the floor or wall of a spacecraft, such as an orbiting laboratory or an interplanetary vehicle.

With a device such as the Exer-Genie, Dr. Mangelsdorf predicts, an astronaut could probably keep in good physical condition by exercising as little as four times a day for periods of only six minutes each. Use of the Exer-Genie combines both isometric exercise (muscle tension without movement) and isotonic exercise (movement of the muscles under tension).

"It is generally agreed," states Dr. Mangelsdorf, "that a well designed exercise program for astronauts on long missions is necessary to maintain an acceptable physical condition.

"The cardiovascular, respiratory and musculoskeletal systems are expected to deteriorate unless specific measures are taken to prevent the body adapting to an environment that requires a minimum of physical effort. A carefully selected exercise program should alleviate the effects of weightlessness, confinement and relative inactivity."

Just how the particular astronaut is reacting to his exercise - his muscular condition and his physical ability to perform the space tasks assigned to him - would be monitored through telemetry to Earth.

Muscle power, or strength, would be measured by a strain gage between the Exer-Genie cylinder and its point of attachment in the spacecraft. Output from the strain gage would take the form of a varying electrical signal. At the same time, the amount of contraction of the major muscle groups would be measured by metering the linear travel of the rope through the cylinder. This linear meter would deliver a specified number of electrical pulses for each inch of rope travel.

Advantages of the Exer-Genie are that it is light weight, it can be operated effectively under zero-gravity conditions, and it can be used for both isometric and isotonic exercises, which are necessary to the conditioning of muscles, bones and the cardiovascular system (heart and blood vessel function).

Four basic exercises are planned by Lockheed for future astronauts: the combination lift, including deadlift, the squat, forearm curl, and military press in a single continuous motion; the standing bench press; rowing against resistance; and bicycling against resistance.

The pattern of exercises with the Exer-Genie is generally the same. The apparatus is hooked to the deck, the bulkhead or some other point. The cord is then pulled through the sleeve, either with the hands or the feet. During this pulling operation, the body assumes various positions, depending upon the group of muscles selected for exercise.

Daniel Murphy, San Jose State College graduate student, demonstrates the Exer-Genie exercise device in Lockheed Missiles and Space Company's space chamber. Lockheed uses the Exer-Genie in studies and experiments designed to contribute to the maintenance of man in space missions lasting weeks or months. The device could help astronauts keep in good physical shape in the weightlessness of space, according to Lockheed. Murphy is a former national collegiate record holder in 10,000 meters.

In each instance the muscle is tensed for 10 seconds at the beginning of the exercise by the simple device of holding both the leading and trailing ends of the cord. At the end of the 10-second period, the trailing edge is released and the pull-through operation begun. Such a routine supplies the benefits of both isometric stress and isotonic movement exercise.

The Exer-Genie was developed by Dean D. Miller, former associate professor and track coach at San Jose State College, San Jose, California. Miller conducted many of his own tests with the device and reports significant physical changes in individuals using the Exer-Genie.

Such changes include an increase in the size of muscles, a decrease in waist measurement and a drop in weight.

Miller is a consultant to Lockheed in the use of the Exer-Genie.

FOR SALE: 2-bedroom house with aluminum siding, fenced yard, garage. Wilson, 722-0223.

FOR SALE: German Shepherd pups, championship bloodlines. Madden, 826-2010.

FOR SALE: AKC registered Poodle pups. Byrd, 826-7403.

NASA BOWLING LEAGUE

Hampton Scientific continues to lead Group A in the NASA Tenpin League with 37.5 wins and 6.5 losses. Top scores for the week were rolled by Glen McKenzie with a 235 game and Bill Beasley with a 580 set.

Strikeouts lead Group B with 34.5 wins and 9.5 losses. Top bowler for the week was Joe Twigg with a 261 game and 661 set.

HMS leads Group C with 32 wins and 12 losses. Following in a close second is ACD with 31 wins and 13 losses. Rolling high scores were Rodney Duncan with a 276 game and 745 set and Peggy Mayo with a 222 game and 603 set.

GROUP A

Hampton Scient.	37.5	6.5	Phantoms	22.5	21.5
Filter Queen	26	18	Alley Cats	22	22
Mexicali	23	21	Odd Balls	15.5	28.5
Hornets	23	21	Unitary	14.5	29.5
Flyers	22.5	21.5	Short Circuits	13.5	30.5

GROUP B			GROUP C		
Strikeouts	34.5	9.5	HMS	32	12
West Gate Grill	31	13	ACD	31	13
Question Marks	27	17	Greenhorns	30	14
Southeastern Tile	26	18	RPM	28	16
Misfits	25	19	Trackers	26	18
Cee Pees	24	20	Mets	24	20
Galaxies	21	23	Sparkys	23	21
Hampton Scient.	21	23	Latecomers	22	22
A-OK's	19.5	24.5	Dillys	21	23
Flight	19	25	C-Scouts	20	24
Payloads	18	26	Bowling Belles	16	28
Flight Engineers	18	26	Gliders	15	29
Pinwigglers	12	32	Chargers	11	33
Analogs	12	32	Hits and Misses	9	35

RECENT INJURIES POINT OUT NEED FOR EXTRA SAFETY PRECAUTIONS

Two recent injuries point out the need for increased job analysis and evaluation by personnel engaged in moving relatively heavy objects, according to Center safety officials.

In the first instance, an employee was engaged in moving a four-drawer combination-lock file cabinet which had been freshly painted. The cabinet was placed on a two-wheeled hand truck and tilted toward the employee holding the truck handle. Apparently the employee's foot slipped on Kraft paper on which the file was resting and he lost control of the truck. The truck fell toward him and he suffered loss of a toe and a serious foot wound as the 1/2 pipe "leg", fitted to the truck handle to maintain it in a horizontal position parallel to the floor, passed through his foot.

In the second incident, a mechanic lost two teeth and damaged two others when the transition section of a pilot wind tunnel was being moved from a nearby shop building to the tunnel for installation. The two employees attempting to move the heavy object were ascending a steep ramp when the section became overbalanced and flipped backwards toward the employee pushing it. The employee fell on the tunnel section severely cutting his chin and damaging his teeth.

Center safety officials cautioned anyone attempting to move heavy objects to carefully survey the situation before starting the job to make certain that they are equal to the task both in numbers and competence and that the proper equipment in good working order is available for the move. Should there be any doubt on any of these points, supervision should be consulted to determine whether the move should be made by personnel available in the section or whether specialists experienced in heavy equipment handling should be called in to accomplish the move.

Lt. Gen. George N. Antonakos, Chief of Air Staff, Royal Hellenic Air Force, visited the Center recently and toured a number of research facilities. Shown with the General are front row (from left): Henry A. Fedziuk, Chief of Research Reports Division; General Antonakos; Charles J. Donlan, Langley's Associate Director; Brig. Gen. Anastasios Marmaras, Royal Hellenic Air Force, and Brig. Gen. John W. Baer, TAC Headquarters. Back row - Major Arthur G. Limpantis, TAC; Colonel G. Askounis, TAC; Major Dimitrios Danapoulos, Royal Hellenic Air Force; Colonel William G. Wade, USAF, and Colonel E. C. Ambrosen, TAC.

UNITED FUND TOTAL INCREASED

Two contract representatives who donated to the Peninsula United Fund through the Langley Center's drive reported 100 percent participation. The two companies were Boeing and Ling-Temco-Vought. Belated contributions received from employees of both companies brought the grand total for the Langley drive to $68,090.61.

SINGLETON CLUB NOTICE: The Singleton Club will sponsor a Christmas Mixer on Friday, December 10 from 8 p.m. to midnight at the Riverdale Community Room. All single NASA employees are invited to attend. Dress will be casual and the cost will be one dollar per person. Membership cards will be distributed. For additional information call Sharon Huggett, 596-9583, or Tom Foughner, 722-1587.

BASKETBALL NOTICE: An organizational meeting of the NASA Basketball League will be held on Monday, December 6 at 8 p.m. in the Activities Building. All teams planning to enter the league are requested to have a representative present. For additional information call Charlie Clarke, 2631.

36-STORY ROCKET TO GET THE SHAKES

This country's mightiest space vehicle - the 36-story Apollo/Saturn V - will be assembled at the Marshall Space Flight Center soon for the first and only time outside the launch area.

A three-stage giant, the Saturn V will go into the Center's tallest of tall test stands early next year for simulated "flight" tests.

Here the big rocket will get the "shaking" of its life.

Hot firings of the complete "stack" will still be confined to actual launch, although all flight stages are captive tested individually before delivery to the Kennedy Space Center for launch.

Marshall Center built the gigantic facility to verify bending and vibration characteristics of flight vehicles. This is dynamic testing in engineers' language.

The new dynamic test stand dominates the test area horizon. It is the skyscraper among facilities which include a booster static test stand, a nearby Saturn I dynamic test stand, and several smaller structures used in the Center's Saturn programs.

The tallest "building" in Alabama, the steel coated stand has a 360-foot high superstructure. When a still leg crane atop the superstructure is erected, overall height is some 450 feet.

The tower, 98 feet square, contains some 2,700 tons of structural steel and is supported by a 7,000 cubic yard reinforced concrete base. This base also has 1,200 tons of reinforcing steel.

Stages of the Saturn V "dynamic vehicle" have already started arriving at the Center by barge.

Vehicle stages are: the S-IC first stage, 33 feet in diameter and 138 feet long; S-II second stage, 33 feet in diameter and 82 feet long; and the S-IVB third stage, 21.7 feet in diameter and 59 feet long. Atop the three stages will be an instrument unit and the Apollo spacecraft.

Test engineers will fill the booster's fuel tank with water to simulate the weight and volume of kerosene fuel.

Giant "shakers," electrodynamic devices, will move the vehicle during the tests to duplicate the bending and vibration modes expected during flight.

Test engineers say that the vehicle's control system - engines gimballing to change course - will cause the vehicle to vibrate or bend. Theoretical calculations have already been made on how the rocket will behave and dynamic testing will be used to prove these theories.

Results from these tests are monitored by "wiring" the dynamic vehicle with strain gauges and accelerometers.

Such elaborate ground testing has proved its worth to rocket developers. A similar testing program was conducted on the Saturn I launch vehicle. Ten successful launches out of ten attempts were scored in the now complete Saturn I program.

Technicians stand on a work platform on the inside of a giant new test stand at the Marshall Space Flight Center. The fully assembled three-stage Saturn V launch vehicle will be placed in this stand early next year for "shake" tests to determine bending and vibration characteristics of the 365-foot tall rocket. Workmen are shown at about the 350-foot level.

PROFESSORS TO VISIT CENTER

Dr. John W. Cell, Head of the Department of Mathematics, North Carolina State University, will visit the Langley Center on December 7. Dr. Cell will lecture on "Finite Transforms" at 9 a.m. in Room 219, Building 587.

Dr. Robert W. Truitt, Head of the Department of Mechanical Engineering, North Carolina State University, will visit the Center on December 17. He will lecture on "Laminar Boundary Layer and Disassociation of Ionized Gases" at 9 a.m. in Room 219, Building 587.

Interested staff members are invited to attend. At the conclusion of the lectures the professors will be available for consultation with regard to their respective graduate study program. Those wishing an appointment should call the Training Office, telephone 2611.

FOR SALE: Girl's 20-inch bicycle - $15. Trimpi, 596-1282.

WANTED: Ride from Pine Chapel Apartments to E.A. on 8 shift. Pitzer, 2507.

WANTED: Ride from Big Bethel Rd. to E.A. on 8 shift. Hemeter, 2235.

FOR SALE: 24-foot extension ladder. Harris, 851-0977.

FOR SALE: Polaroid 150 land camera with accessories - $50. Newcomb, 596-8241.

NOTICE: Bowlers are needed for several teams in the NASA Tenpin League. Interested persons call Henley, 2543.

FOR SALE: Spanish guitar. Miller, 595-0731.

WANTED: Ride from Armistead Ave. and Newport News Ave. to W.A. on 7:30 shift. Schexnayder, 4586.

FOR SALE: F4.5 140 mm preset lens in Exakta mount with 230 mm converter, case, and lens caps - $35. Yeager, 877-9063.

FOR RENT: 3-bedroom rancher on Menchville Rd., Denbigh $125 per month. Boyd, 826-4545.

FOR SALE: Harmon-Kardon FM stereo tuner - $90, Electrovoice 12-inch Coax speaker - $15. Butler, 838-1734.

NEW TRACKING STATION PLANNED

A tracking and telemetry station to support Application Technology Satellites will be established by NASA at Toowoomba in eastern Australia near the city of Brisbane.

Plans for the new station were jointly announced by James E. Webb, NASA Administrator, and Allen Fairhall, Australian Minister for Supply. NASA and the Department of Supply are the cooperating agencies for the government of the United States and the Commonwealth of Australia.

The station to be established at Cooby Creek, 16 miles north of Toowoomba in the Darling Downs, Queensland, and 80 miles west of Brisbane, will support a NASA satellite program known as ATS (Applications Technology Satellites). Multiple experimental and scientific payloads aboard these spacecraft will serve for satellite communications and television transmission, meteorological studies including pictures of the Earth's cloud cover, navigational studies and other studies of radio propagation and gravity gradient.

Satellites in the ATS series will be placed in orbit at two levels: at medium altitude, and at the synchronous altitude of 22,300 miles where the spacecraft, circling the Earth at the speed of Earth rotation, seems to hover over one spot.

Equipment for the station will include a 40-foot diameter parabolic "dish" type antenna which will be able to transmit commands to the satellite and receive telemetry from it. There will also be several trailers in which specialized electronic equipment will be housed. All electronic equipment will be provided by NASA.

Staff at the new station will number between 60 and 70 and will consist of scientists, engineers, technicians and supporting personnel. A contract will be let to private industry for operation and maintenance of the station under a Department of Supply station director.

In addition, there will be a number of American scientists and engineers associated with design and development of instrumentation at the station and aboard the satellite. Australian counterparts who will work with this team will be drawn from the Department of Supply and other organizations in Australia interested in such fields as communications, meteorology and navigation.

Responsibility for operation and maintenance rests with the Department of Supply, under inter-governmental agreement, as with the other NASA facilities in Australia at Carnarvon, Woomera and Canberra.

Cost of the new facility is expected to approximate $6 million. Fabrication of the antenna and trailorized equipment will be completed in the United States in time to be shipped to Australia in June 1966.

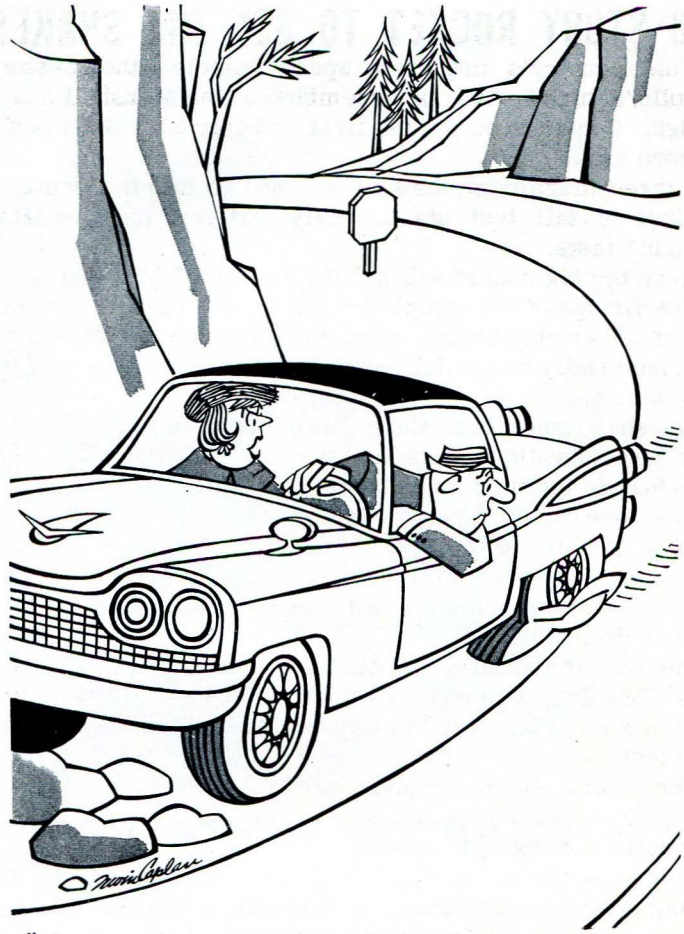
CALENDAR NOTICE

Officials of the Stock Section announced that requests for 1966 desk and wall calendars should be submitted by Friday, December 10.

Sections are asked to take an inventory as to the number of calendars needed and report it to their division office. The division office will forward the order to the Stock Section.

WANTED: Fifth driver from Fox Hill-Hallwood-Old Buckroe Rd. area to W.A. on 8 shift. Kelly, 4450.

FOR SALE: Lionel freight train, special cars, loading platform, track and accessories. Czarnecki, 596-0645.



"I'M GLAD IT'S ONLY A BLOWOUT....FOR A SECOND I THOUGHT WE'D BROKEN THE SOUND BARRIER."

EMPLOYEE CONDUCT ON THE JOB

The manner in which an employee conducts himself on the job is frequently relevant to the proper, economical and efficient accomplishment of his official duties and responsibilities. In addition, those employees who are in direct contact with the public play a most significant role in determining the public's attitude toward the Federal service, both by the manner in which they serve the public and the way in which they conduct themselves generally in the view of the public.

Employees are expected during duty hours consistently to apply themselves to the duties of their positions and to give full value in services rendered to NASA and the public. Idleness, wasting time, or failure to be at work on assigned tasks will not be tolerated. Instructions of supervisors must be carried out promptly or within established deadlines insofar as possible.

Employees may not use Federal property of any kind for other than officially approved activities. They also have a positive responsibility to protect and conserve all Federal property, including equipment and supplies, which is entrusted or issued to them.

Generally speaking, employees of the Federal Government are expected not only to be efficient, but also to conduct themselves in a manner which will reflect favorably on their employer. Although the Government does not want to circumscribe the private lives of its employees, it does expect them to be honest, reliable, trustworthy, and of good character and reputation. They are expected to be loyal to the Government and to NASA.

Center employees enthusiastically supported Operation Christmas Star, sponsored by the Activities Association, by contributing over 1,000 packages for our servicemen in Viet Nam. Left photo - Members of the committee who were responsible for the successful operation are shown with packages in the West Cafeteria. They are (from left): John Quinn, Peter Flatley, Charles Burch, and Wayne Simonton. Also serving on the committee were James D. Smith, Joseph Italiano, Robert Forrest, and James B. Skinner. Right photo - Helping to load the gifts on a truck are Betty Sheets, Marvin Leffel, and Virginia LaPrade. A special Christmas Star airlift has been scheduled to depart Langley Air Force Base for Viet Nam within the next few days.

ASM CHAPTER MEETS DEC. 7

The Hampton Roads Chapter of the American Society for Metals will meet on Tuesday, December 7 at the Warwick Woman's Club, 128 Deep Creek Rd., Newport News.

Dr. Melvin R. Meyerson, Chief of Engineering Matellurgy, National Bureau of Standards, will speak on "The Temporal Dimensional Stability of Steels." Steels treated at high hardness levels inherently lack temporal dimensional stability. Dr. Meyerson will discuss theories of stability and successful treatments for producing the required stability at high hardness levels.

Dr. Meyerson was born in Portsmouth and graduated from Woodrow Wilson High School. He received his B.S. degree in Metallurgical Engineering from Virginia Polytechnic Institute and his M.S. and Ph.D. degrees in Metallurgy from the University of Maryland.

Since 1946 Dr. Meyerson has been with the National Bureau of Standards where he has been engaged in research in the area of materials, dimensional stability, relationship of structures and properties, structural transformations, harden ability and service failures. He is the author of a number of published papers and in 1963 he was the recipient of the Dudley Medla, awarded for the best research paper on materials published by ASTM that year.

A fellowship hour will be held at 6:15 p.m., followed by dinner at 7 and the meeting at 8.

NOTICE: A number of NASA ash trays with the blue-black background and NASA seal in the center are on sale at the Activities Building. Prices are 85 cents boxed and 75 cents unboxed.

FOR SALE: Three-quarter Meisel violin with case, stand and extra set of strings - $50. Presson, 596-9632.

FOR SALE OR RENT: 3-bedroom brick rancher in Forest Park, assume loan or refinance. Henderson, 826-3388.

GENERAL WENGER VISITS CENTER

(Continued from page 1)

ed with a description of the Space Radiation Effects Laboratory, its status, and the role of the Virginia Associated Research Council.

William C. Hayes, MORL Studies Office, reviewed the work leading to the concept of the Manned Orbital Research Laboratory and how this concept was being used as a focus for advancing technology. The Integrated Life Support System, for example, is a derivative of these studies and will itself be a valuable research tool for further contributions in the life-support area.

The visitors inspected the Integrated Life Support System where Ralph W. Stone, Space Mechanics Division, and Albin O. Pearson, Flight Reentry Programs Office, briefly outlined the activities currently in progress. The General and his staff donned dust-free clothing and were taken into the tank for an inspection of the on-board systems and living quarters.

The group also made brief stops at the Lunar Landing Research Facility, the Lunar Orbit and Langley Approach Simulator and the Rendezvous and Docking Simulator.

TOUCH FOOTBALL NOTICE. . .The NASA Touch Football League gained revenge on the KNADS, League Champs, when the All Stars intercepted two passes which resulted in touchdowns to pace their 36-12 win over the KNADS.

FOR SALE: Buescher cornet. Davey, 898-5664.

WANTED: Piano in good condition, preferably spinet size. S. W. Barnes, 596-9456.

FOR SALE: 1956 Chevrolet with rebuilt engine and new clutch. Hubbard, LY 6-8753.

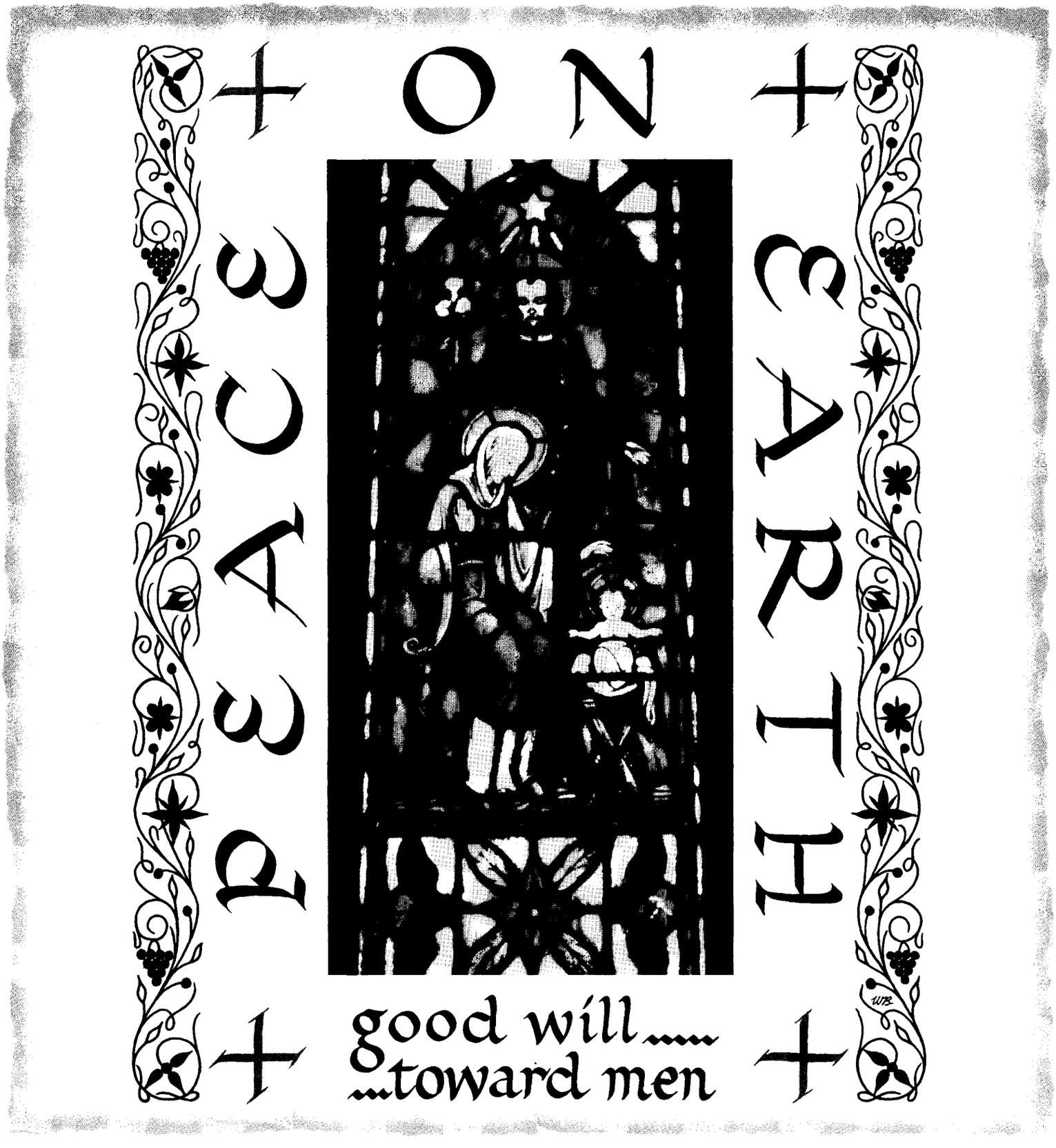
WANTED: Passenger to St. Louis December 22. Biermann, 596-4196.

WANTED: Home for puppies. Holley, 722-7178 after 5 p.m.

DR. EUGENE M. EMME

Langley Researcher

VOLUME 4, NUMBER 24 | LANGLEY RESEARCH CENTER | DECEMBER 17, 1965



Once again a year of significant accomplishment is drawing to a close. The important role that Langley continues to play in the overall NASA and national aerospace program is made possible by the combined efforts of all members of the staff. I believe that every member of the Langley staff derives personal satisfaction from his own significant contributions in meeting the challenging problems of the past year and is well prepared to meet those that lie ahead.

The holiday season, just before the new year begins, is an appropriate time to take stock of this year's accomplishments and to rededicate ourselves to the future task of advancing the science of aerospace flight in the United States, and in maintaining the Center's record of generous and extensive participation in worthwhile community endeavors.

This is also a good time for each of us to pause in his tasks to strengthen old and new friendships.

Best wishes for a MERRY CHRISTMAS and a HAPPY NEW YEAR for you and your families.

Floyd L. Thompson

NASA AND VIRGINIA DEDICATE TWO NEW RESEARCH FACILITIES

Two new facilities which will be the focal point of a national scientific research and graduate education center on the Virginia Peninsula were dedicated by NASA and the Virginia Associated Research Center in ceremonies attended by Governor Albertis S. Harrison, Jr., on Wednesday.

The dedication program started at 10:30 a.m. at the NASA Space Radiation Effects Laboratory located on a 110-acre site at Oyster Point in Newport News. This ceremony was followed by a brief visit to VARC's Nuclear Science Building nearing completion about a third of a mile from the NASA facility, and was concluded with a luncheon at the Hotel Chamberlin where Governor Harrision was the guest of honor and made the principal address.

The ceremonies were attended by an invited group of local, State, and national Government officials, and representatives of educational institutions and private industry.

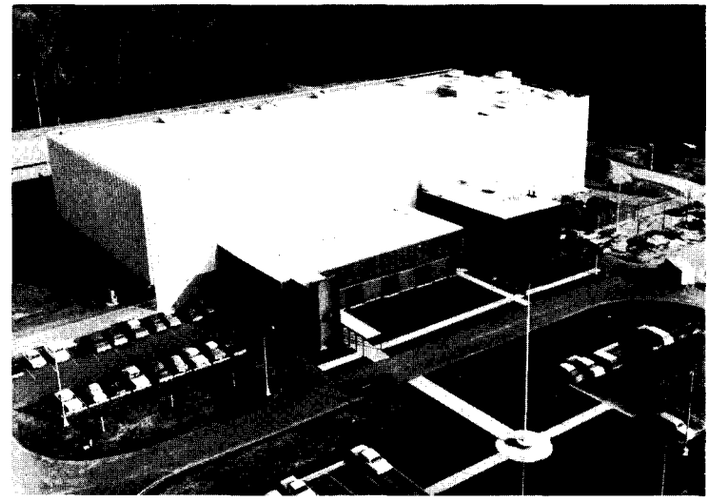
Dr. Floyd L. Thompson, Director of the Langley Research Center, which established the $15 million Space Radiation Effects Laboratory for research in support of national programs in space technology, presided at the opening session. He discussed the role of the NASA laboratory's 600 million electron volt synchrocyclotron and associated equipment in relation to Langley's program of advanced research and technology and the overall national space effort.

Dr. Thompson introduced Dr. Edgar F. Shannon, Jr., President of the University of Virginia and 1965 Chairman of the VARC governing body, who talked on the graduate education program to be conducted by VARC in cooperation with NASA. VARC is a joint venture of the College of William and Mary, the University of Virginia, and the Virginia Polytechnic Institute, and was authorized by the Virginia General Assembly. Each of the three schools conducts aerospace graduate study programs in cooperation with the Langley Research Center.

The dedication visitors, including a group of officials from NASA Headquarters in Washington, D.C., headed by Dr. Mac C. Adams, Associate Administrator for Advanced Research and Technology, were given an opportunity to inspect the Space Radiation Effects Laboratory and to see displays illustrating the type of research to be conducted in the facility. Exhibits or displays of documents depicting research conducted in basic physics and space radiation effects were provided by six schools, including William and Mary, the University of Virginia, VPI, the Medical College of Virginia, North Carolina State College, and Rensselaer Polytechnic Institute.

Invocation at the morning and luncheon ceremonies were offered by Rabbi J. J. Finkle of Rodef Sholom Temple of Hampton. Music at the SREL site was provided by the Tactical Air Command Band of the U.S. Air Force, directed by CWO E. A. Dieter.

After the SREL ceremony, the guests went to the VARC building where Governor Harrison unveiled a plaque symbolizing the naming of the State facility as the Nuclear Science Building. The $817,000 facility will include administrative and faculty offices, classrooms, research and teaching laboratories, and a machine shop. It is expected to be completed by early February and will go into operation simultaneously with SREL at that time. VARC already is making plans for an addition to the building for research faculty offices and library space.



Two new facilities which will be the focal point of a national scientific research and graduate education center on the Virginia Peninsula were dedicated by NASA and the Virginia Associated Research Center (VARC) in ceremonies held Wednesday. The top photograph shows an aerial view of the NASA Space Radiation Effects Laboratory which houses a synchrocyclotron capable of emitting protons with energies of 600 million electron volts. The College of William and Mary, University of Virginia and Virginia Polytechnic Institute serve jointly as the Virginia Associated Research Center in managing and operating the $15 million research laboratory under contract to NASA. The lower photograph shows an aerial view of VARC's Nuclear Science Building nearing completion about a third of a mile from the NASA facility.

At the luncheon, Dr. William H. McFarlane, former Director of the Virginia State Council of Higher Education who was appointed Director of VARC in May 1964, served as master of ceremonies and introduced Governor Harrison. VARC was authorized in 1962 during the early part of Governor Harrison's administration by action of the General Assembly. VARC was officially established in July 1962; in August 1963 the State received the deed to 348 acres of surplus U.S. Government land for use by the agency; plans for construction of the Nuclear Science Build-

(Continued on page 6)

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

ORANGE BLOSSOMS. . .Wedding bells will ring tomorrow when Robert B. Reynolds, Analysis and Computation Division, takes his final vows with Vivian Moberg, Newport News. The bride is the daughter of Richard J. Moberg, Aero-Physics Division.

BABY DERBY. . .Announcing the birth of a seven pound, nine ounce son, Nicholas Paul, on November 28 is Dr. Robert Costen, Aero-Physics Division. . .Weighing in at five pounds, thirteen ounces on December 1 was Kevin Scott, new son of Bill Ashworth, Analysis and Computation Division. . .Word has been received at the Center that Brenda Connell, Procurement Division, became the mother of a seven pound, nine ounce son, Michael Tracy, on October 27.

PAY DAY GAME NIGHT. . .The bi-weekly Pay Day Game Nights will be resumed on Thursday, January 13 at 8 p.m. at the Activities Building.

FOR SALE: 3-bedroom split-level house. Jaite, 596-9775.
FOR SALE: Westinghouse AM clock-radio. Jackson, 898-6645.

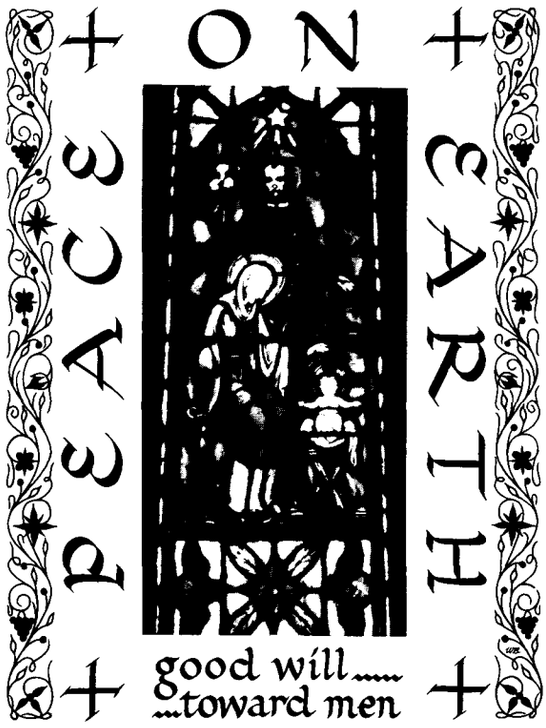
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LANGLEY RESEARCH CENTER

H. E. ROCKEY

LANGLEY STATION
HAMPTON, VIRGINIA 23365

703-722-7961

H. E. Rockey, President of the Activities Association, announced the acceptance and approval of an official design of an NASA business card (above) which may be used in the conduct of official NASA business. Cards may be purchased by the individual and may be ordered through District Representatives to the Activities Association. The cost will be $2.50 per 100 cards. As the cards bear the official NASA seal, any deviation from the approved format must be submitted to the Assistant Director for Administration for review.



The cover for this Christmas issue was designed by Wesley Berryman, Technical Illustration Section. Wesley took the photo of the Nativity window in the Langley Base Chapel and around this he penned his lettering and decoration.

CAFETERIA MENU

The following menu will be served in the cafeterias during the week of December 20:

Monday - Tomato barley soup, chuckwagon steak with onion gravy, pork chops, stuffed cabbage, fish cakes.

Tuesday - Cream of potato soup, grilled T-bone steak, baked ham with raisin sauce, fried fish sticks, western omelette.

Wednesday - French onion soup, country style chopped steak, stuffed shrimp, Polish sausage, deviled crab, hot dog.

Thursday - Chicken vegetable soup, Spanish pot roast, barbecued spare ribs, fried chicken, beef ravioli.

Friday - H O L I D A Y

The menu for the week of December 27 is as follows:

Monday - Chicken-rice soup, roast beef, Canadian bacon, Salisbury steak, chili con carne.

Tuesday - Cream of tomato soup, barbecued beef chunks over rice, grilled ham slice, fried fish, franks and beans.

Wednesday - Split green pea soup, breaded veal cutlet, baked meat loaf, liver and onions, barbecued sandwich.

Thursday - Vegetable-beef soup, grilled steak, fried oysters, fried chicken, grilled cheese-bacon sandwich.

Friday - H O L I D A Y

FOR SALE: Conns student slide trombone - $100. Locke, 877-1438.

DR. HUGH L. DRYDEN, NASA DEPUTY ADMINISTRATOR, DIES

Dr. Hugh L. Dryden, NASA Deputy Administrator, died December 2 in the Hospital of National Institutes of Health, Washington, D. C.

He was internationally recognized for his scientific contributions to fluid mechanics and boundary layer phenomena, and was highly honored for his leadership of research and development associated with aeronautics and astronautics. He became Director of Research of the National Advisory Committee for Aeronautics in September 1947, and was named Director of NACA in May 1949, serving until it was superseded by NASA in 1958.

Dr. Dryden held a number of posts in addition to his NASA responsibilities. He was a member of several scientific committees advising government agencies, including the Department of Defense and the military services. He was Technical Advisor to the Representative of the United States to the United Nations Committee on the Peaceful Uses of Outer Space. He was a consultant to the Science Advisory Committee to the President and a member of the Standing Committee of the Federal Delegate to the NATO Advisory Group for Aeronautical Research and Development.

Dr. Dryden was born in Pocomoke City, Maryland, in 1898, and earned a bachelor of arts degree in 1916 and a Ph.D. in 1919, both from Johns Hopkins University. He joined the staff of the National Bureau of Standards in 1918, where he performed his distinguished research contributing to supersonic flight of aircraft and missiles. He became Associate Director of the National Bureau of Standards in 1946, having previously served for a short time as Assistant Director. Through World War II, Dr. Dryden served on numerous technical groups and task forces concerned with aeronautics and guided missiles for the Joint Chiefs of Staff, the military services, and the NACA. In 1945 he was the Deputy Scientific Director of the AAF Scientific Advisory Board appointed by General H. H. Arnold to prepare a report to guide future Air Force research and development.

Many honors and awards were received by Dr. Dryden, including the following:

First American to deliver the Wright Brothers Annual Lecture before the Institute of the Aeronautical Sciences (1938); Sylvanus Albert Reed Award (1940); U.S. Army Air Forces' Medal of Freedom (1946), the second highest U.S. award; Presidential Certificate of Merit (1948); Order of the British Empire (civilian division - 1948); 37th Wilbur Wright Memorial Lecture before the Royal Aeronautical Society (1949); Daniel Guggenheim Medal (1950); Wright Brothers Memorial Trophy (19550).

Also the Ludwig Prandtl Memorial Lecture of the Wissenschaftliche Gesellschaft fur Luftfahrt (1958); Career Service Award of the National Civil Service League (1958); President's Award for Distinguished Federal Civilian Service (1960); Elliott Cresson Medal of the Franklin Institute (1961); First Von Karman Lecture before the American Rocket Society (1962); Rockefeller Public Service Award (1962); John Fritz Medal (1963); Gold Medal of the International Benjamin Franklin Society (1963), and First Annual Award Dr. Th. von Karman Memorial Citation (1963).

Dr. Hugh L. Dryden, NASA Deputy Administrator, died on December 2 in Washington D. C. The above portrait of Dr. Dryden was painted by artist Albert Murray of New York.

Dr. Dryden held honorary degrees from the Polytechnic Institute of Brooklyn, New York University, Rensselaer Polytechnic Institute, University of Pennsylvania, Western Maryland College, Johns Hopkins University, Adelphi College, University of Maryland, South Dakota School of Mines and Technology, Case Institute of Technology, American University and Northwestern University. He was the author of over 100 articles on aeronautical and space research.

Dr. Dryden was Home Secretary of the National Academy of Sciences; Charter Member, Honorary Fellow, and former President of the Institute of the aerospace Sciences; Honorary Fellow of the Royal Aeronautical Society, the British Interplanetary Society, and the Canadian Aeronautics and Space Institute; Fellow of the American Academy of Arts and Sciences; Correspondant de l'Academie des Sciences de l'Institute de France; and a member of numerous professional societies and organizations. He was a Trustee of the National Geographic Society.

FOR SALE: 1964 Malibu, 6-cylinder with power steering. Dowdy, LY 6-7277 after 5.

WANTED: Gentleman to share house. Kent, 826-1439.

FOR SALE: 30-inch Craftsman lawn sweeper. Tankersley, 244-6944.

FOR RENT: Room in home in Riverdale section. Mrs. Rossman, 3445 or 838-1758.

FOR SALE: 3-bedroom rancher with fireplace - convenient to Langley. Moore, 526-6986.

TWO NEW RESEARCH FACILITIES

(Continued from page 3)

ing were begun immediately after the 1964 General Assembly appropriated the necessary funds.

Work preliminary to construction of SREL was begun by NASA in early 1963. Primary purpose of the laboratory is to provide the Langley Research Center the means by which tests and fundamental studies can be made of the effect on spacecraft and their systems of the particle radiation streaming from the sun or trapped in the Earth's magnetic field. The research facility will make it possible for scientists to simulate space radiation and to conduct studies designed to increase the reliability and safety of spacecraft and space missions.

VARC, in addition to managing and operating SREL under contract to NASA, has two major functions. These include the development of a research program in which qualified institutions of higher learning and other research organizations may use the NASA laboratory; and the carrying out of a coordinated program of resident graduate instruction under the joint sponsorship of the participating institutions. NASA and the State will share the use of SREL for applied research in radiation effects and basic studies in nuclear physics and related disciplines.

The presidents of the three sponsoring schools form the governing council of VARC. The position of chairman rotates annually among the presidents of the three schools. They include Dr. Davis Y. Paschall, president of William and Mary; Dr. Shannon, who is serving currently; and Dr. T. Marshall Hahn, president of VPI.

In connection with its responsibilities for operation of the SREL facility under contract to NASA, the VARC has appointed Dr. Piet C. Gugelot as Scientific Director of SREL, effective January 1. Dr. Gugelot, born in Bussam, the Netherlands, is a naturalized citizen of the United States. Since 1956, he has been director of the Institute for Nuclear Physics Research in Amsterdam.

GEN. RITLAND AWARDED NASA MEDAL

Maj. Gen. O. J. Ritland, who recently retired from the Air Force, was awarded the NASA Exceptional Service Medal last month by James E. Webb, NASA Administrator.

Gen. Ritland, Deputy Commander for Space of the Air Force Systems Command, has been closely associated since 1962 with NASA's Office of Manned Space Flight. He was cited for his contributions to the Mercury and Gemini Manned Space Flight Programs.

"He led development of the technology for man-rating the Mercury-Atlas and Gemini-Titan launch vehicles and has provided an unprecedented example of cooperation between the Air Force and NASA in the attainment of man's capabilities in space flight," the citation reads.

A native of Berthoud, Colo., Gen. Ritland began his flying career as an aviation cadet in 1932. He subsequently became a test pilot at Wright Field, Ohio, and flew more than 200 types of aircraft before being assigned to the China-Burma-India theater in 1944.

In 1959 he was named Commander of the Air Force Ballistics Missiles Division. He assumed command of the newly created Space Systems Division of the Air Force Systems Command at Andrews Air Force Base, Maryland, in 1961 and was appointed Deputy to the Commander of AFSC in 1962.

Thomas Carroll (right), Langley's first test pilot, died on December 9 at his home near Washington, D. C. The above picture was taken in the 1920's and shows Carroll in the cockpit of one of Langley's early research airplanes. He received his degree in Law from Georgetown University in 1920 and joined the Langley staff on November 16, 1920 as an Airplane Test Pilot. He was appointed Chief Test Pilot on July 1, 1925 and resigned May 24, 1929 to accept a position with private industry.

OPERATION CLEAN UP SUCCESSFUL

A letter has been received at the Center from Dr. Robert C. Seamans Jr., NASA Deputy Administrator, commending NASA and the Langley Center on their outstanding performance on Operation Clean Up. In his letter Dr. Seamans stated:

"Operation Clean Up, NASA's first agency-wide records retirement campaign, was successfully completed on October 31, 1965. The 'Operation' was the first step in the NASA Records Control and Retirement Program. We are pleased with the accomplishments of this campaign in retiring substantial quantities of unneeded records and recovering a large number of filing cabinets.

"A significant part of the success of Operation Clean Up was due to the outstanding performance of the Langley Research Center in surpassing the agency goal and retiring 25.6 percent of its records holdings."

DEARBORN DIES IN FLORIDA

Clinton H. Dearborn, a former member of the Langley staff, died at his retirement home in Florida Sunday.

Dearborn was born in 1897 and received his B.S. degree in Mechanical Engineering from the University of Michigan in 1922. He joined the Langley staff on August 13, 1927 as an Assistant Aeronautical Engineer. In 1935 he was appointed Head of Full-Scale Tunnel and in 1950 he transferred to Washington Headquarters where he served as assistant to the Director. He retired in 1954.

FOR RENT: Furnished or unfurnished apartment on LaSalle Ave. - $55 per month. Huck, 723-4548 after 4:15.

FOR SALE: New Kenmore vacuum cleaner - $25. Voros, 877-3050.

FOR RENT: 2-bedroom house with stove and refrigerator-$89 per month. Gardner, 826-7753.

FROM KITTY HAWK TO SPACE

How far and how fast man has traveled in the 62-year history of powered flight has been graphically depicted by an exhibit of the National Air Museum of the Smithsonian Institution.

The display contrasts the first airplane, the Wright Flyer, with the X-15, the most advanced winged vehicle in in the sky. A scale model of the X-15 was presented for the display by NASA.

The two airplanes were showcased side by side. This is how they compared:

Speed	31 mph	4104 mph
Payload	Pilot and 3 instruments, about 150 lbs.	1440 lbs. of research instrumentation and recording equipment
Engine	4-cylinder reciprocating engine, made by the Wright Brothers and by Charles Taylor	By rocket, Model XLR-99, made by Reaction Motors Division, Thiokol Chemical Corp.
Propellant	Gasoline, about 2 qts.	1003 gals. of liquid oxygen, 1445 gals. of anhydrous ammonia.
Horsepower	12	625,000 at 4100 mph
Weight	605 pounds	33,000 lbs. at time of launch
Span	40ft., 4 in.	22 ft., 4 in.
Length	21 ft., 1 in.	50 feet
Launch	From rail on sand	From B-52 bomber at 45,000 ft.
Landing Gear	Skids	Skids and Nose Wheel
Flights	4 (all on Dec. 17, 1903)	150 (as of October 1965, and still flying)

APPRENTICE HONOR ROLL

Twelve apprentices completed the mid-term semester with an average of 97 or above. Members of the honor roll are as follows:

William E. Anspach, Material Processing and Development; Charles E. Cockrell, James F. Garvin, Ralph R. Stoddard, and Davis B. Wright, all of Research Projects and Models; George C. Firth, Space Vacuum Laboratory; Carter F. Lewis, Magnetoplasmadynamics; James E. Pierce, High-Pressure Shock Tube; Thomas Pressley, Spacecraft Structures; Howard E. Price, 8-foot Transonic Tunnel; James R. Tyeryar, Polymer Laboratory, and George B. Whitehurst, High-Temperature Materials.

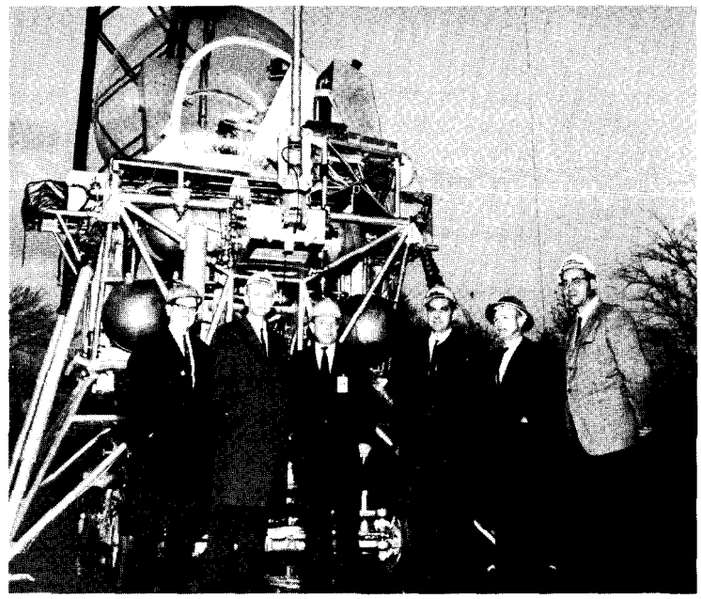
FOR SALE: Carburetor and manifold kit - fits all Turbocharged Corvair engines. Fontana, 723-1425.

WANTED: Ride from Water Rd., Todds Lane, to E.A. on 8 shift. Jean Miller, 2207.

WANTED: Passengers to Mississippi via Interstate 85 on December 22. Campbell, 723-1024.

WANTED: Ride or driving combination from Wythe to W.A. on 8 shift. McGuire, 4425.

WANTED: Ride or driving combination from Redheart Dr. to E.A. on 8 shift. Leatherman, 2214.



Dr. Mac C. Adams (third from right), former Langley employee and newly appointed Associate Administrator for Advanced Research and Technology at NASA Headquarters, visited the Langley Center on December 2. Shown in front of the Rocket Powered Research Vehicle at the Lunar Land-Research Facility are (from left): Milton B. Ames Jr., Director of the Space Vehicle Research and Technology Division, Office of Advanced Research and Technology; Dr. Floyd L. Thompson, Langley Director; Boyd C. Meyers II, Deputy Associate Administrator of Operations, OART; Dr. Mac Adams; Charles J. Donlan, Langley Associate Director, and Donald E. Hewes, Head of the Spacecraft Research Branch, Space Mechanics Division.

ANNUAL LEAVE NOTICE

As the 1965 leave year comes to a close, staff members are reminded that they have until midnight January 1, 1966, to use the annual leave they earned this year.

For those who started this year with more than 30 days of accumulated annual leave, all the annual leave they earned during 1965 must be used by January 1 or they will lose the unused portion. In other words, they may keep all the accumulated annual leave they had at the beginning of the year but cannot increase it.

Those who had less than 30 days of accumulated leave at the start of the year may end the leave year with 30 days leave, but no more. This means that they must use all of this year's earned leave in excess of 30 days. If the excess leave is not used, they will lose the unused portion.

Unused sick leave may be carried over from year to year with no restrictions and there is no limit on the amount of sick leave which may be accumulated.

WANTED: Alternate driver from Hilton-Brandon Heights-Warwick-on-the-James area to W.A. on 8 shift. Butler, 4621.

FOR SALE: 8-foot pool table. Insley, 868-6124.

FOR SALE: Lion train set, 2 complete trains with tables, 75 ft. of track, model houses and accessories. W. H. Phillips, PA 3-5382.

FOR SALE: Two boy's 20-inch bicycles, one with training wheels - $10 and $15. Clevenson, CH 5-1859.

NEW YEAR'S DANCE PLANNED

The Activities Association plans to welcome in the New Social Year and see the old one out on Friday, December 31 at the Activities Building. The outstanding social event will be semi-formal which means the ladies may wear long or short dresses and their escorts may wear business suits, tuxedoes or tails.

Only a limited number of tickets will be sold and admission will be six dollars per couple. Free setups and seasonal favors will be furnished. Reservations may be made by calling the Activities Building, telephone 4583. No reservations will be held after 10 o'clock.

Music for the affair will be furnished by Charlie Johnson and his band from 9 p.m. until 1 a.m.

Tickets may be purchased from the following members of the Executive Board: Humbert Rockey, Building 1230; Charles Clarke, Building 641; Linda Johnson, Building 1218; Roy Henley, Building 720-B; Joe Siefring, Building 1230; Betty Sheets, Building 1251; Marvin Leffel, Building 1230; Rossalyn Smith, Building 648, and Dick Kurtz, Building 586.

Fireworks will not be permitted in the building and monitors will be stationed at various points.

OUTSIDE EMPLOYMENT POLICY

Staff members are reminded that in order to engage in private employment outside NASA, prior approval must be obtained from Center officials.

NASA employees may not engage in outside employment which might reasonably result in a conflict of interest or an apparent conflict of interest between the private interest of the employee and his official Government duties and responsibilities. Employees are not permitted to work for any firm having a contract with Langley Research Center.

In the absence of such conflict, however, NASA employees are entitled to the same rights and privileges as other citizens and there is no general prohibition against NASA employees engaging in outside employment if the employee's performance of his Government job is not adversely affected by the outside work, and the employee's outside employment does not reflect discredit on the Government or NASA.

When requesting permission to engage in outside employment, a request for approval addressed to the Director should be submitted to the Personnel Office, through official channels, containing the following information:

1. Employee's name, title, grade, and salary.
2. Full description of specific duties or service to be performed.
3. Name and business of person or organization for which the work will be done.
4. Estimated total time that will be devoted to the activity. (If on a continuing basis, the estimated time per year; if not, the anticipated ending time.)
5. Whether service can be performed entirely outside of duty hours; if not, estimated number of hours of absence from work that will be required.
6. Methods or basis of compensation (for example, whether fee basis, per diem, or per annum) and rate or amount of compensation estimated for a specified period.

FOR RENT: 3-bedroom bungalow. Woolard, 723-8213.

"They're Bonds of Freedom . . . With Interest!"

EXAM OPEN FOR SUMMER JOBS

The U.S. Civil Service Commission has announced an examination for Summer Jobs in '66 to fill office and science assistant positions. Because of the large number of capable persons available for summer jobs, this program was designed to allow all who are interested an equal opportunity to compete. It places the hiring of summer employees on a merit basis through a nationwide competitive examination.

The office and science assistant jobs range in grade from 1 through 4, depending upon the duties and requirements of the position.

The closing date for making application for the exam is January 3. Interested persons may receive a copy of the announcement and the necessary application forms from the NASA Board of Examiners, telephone 4681.

QUALITY INCREASE REPORT

In the Federal Salary Reform Bill of 1962 provisions were made to grant Quality Step Increases to General Service (GS) employees who were performing their duties at a high quality level.

During Fiscal Year 1965, NASA granted 627 Quality Increase of which Langley granted 33 to its employees. A total of 26,418 NASA employees were eligible with Langley having 2,777 who were eligible.

WANTED: Additional driver from Buckroe-Holly Court area to E.A. on 7:30 shift. Krodel, 4435.

FOR SALE: 16-foot cabin cruiser with fiberglas hull, trailer, and Sea King outboard motor. Diggs, 868-3831.

FOR SALE: Pair of lady's white Chicago roller skates - size 9 - $12. Firman, 868-9249.

Langley Researcher

VOLUME 4, NUMBER 16 LANGLEY RESEARCH CENTER AUGUST 27, 1965

THREE NASA SCIENTISTS REPORT METEOROID SATELLITE RESULTS

Meteoroids probably will not be unduly hazardous to spacecraft flying for short periods in the near-Earth environment, a NASA report indicated recently.

The report, at a Symposium on Meteor Orbits and Dust conducted in Cambridge, Mass., by the Smithsonian Astrophysical Observatory, was first to include results from the Pegasus satellite experiments.

Charles T. D'Aiutolo, NASA Headquarters Office of Advanced Research and Technology; William H. Kinard, Langley Research Center, and Robert J. Naumann, Marshall Space Flight Center, discussed flight data obtained by Pegasus I and II and the smaller Explorer XXIII satellites, all of which are operating. They included results from Explorer XVI, which ceased operation in 1963.

The three NASA meteoroid scientists making the report said the data substantially agree with estimates based on ground observations by astronomy and laboratory impact study. The only significant difference is in the lower frequency of meteoroid penetrations experienced with thinner materials, as reported by the four satellites. More information is needed to verify the lower penetration rates for thinner materials.

Meteoroid counts are being accumulated rapidly with four active satellites. Meteoroids are particles of matter flying freely and invisibly at great speeds in space above the Earth's atmosphere.

Pegasus II is working normally and reporting useful information on meteoroid punctures of three thicknesses of

(Continued on page 5)

HARRIS APPOINTS CAMPAIGN WORKERS FOR UNITED FUND

T. Aubrey Harris, Chairman of the Center's United Fund campaign, announced that an advanced solicitation of top staff officials will open the Center's annual United Fund effort. Advanced solicitation will get underway on Friday, September 17. A general one-day solicitation of staff members will be held on Friday, September 24.

Assisting Harris in the campaign will be William B. Mayo, vice-chairman, Robert W. Boswinkle, chairman of advanced solicitations, Helen Willey, East financial chairman, and Barbara Durling, West financial chairman.

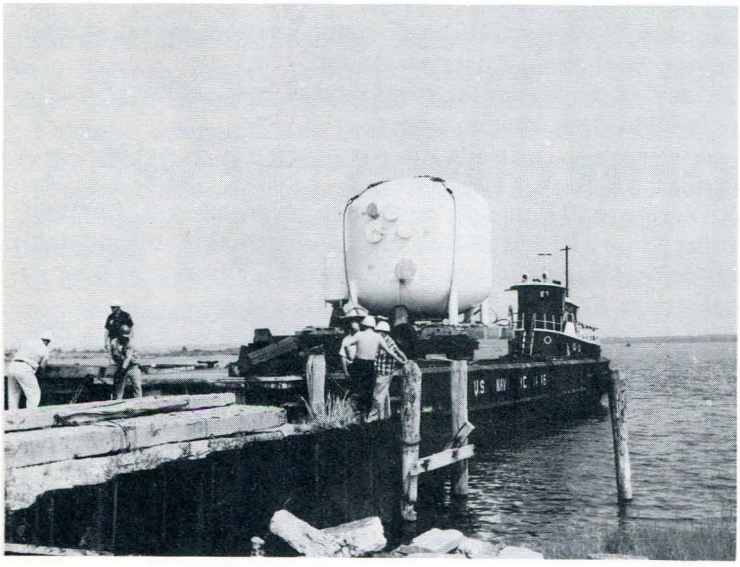
Harris has announced the appointment of the following division chairmen for the drive:

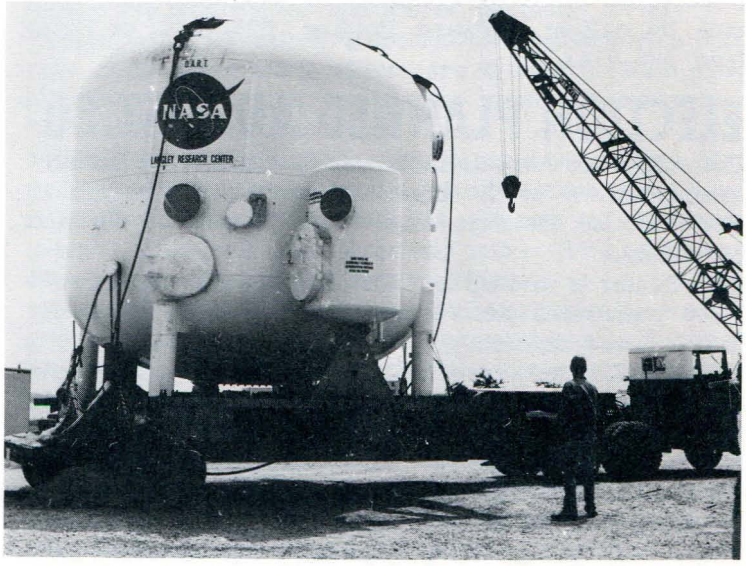
Office of Research Direction, William W. Metz; Aero-Physics, Mitchel H. Bertram; Analysis and Computation, Milner H. Eakew; Applied Materials and Physics, Walter E. Bressette; Dynamic Loads, Harry L. Runyan; Flight Mechanics and Technology, Lucy C. White; Full-Scale Research, John T. McShera; Instrument Research, William D. Mace; Research Reports, David A. Willment; Space Mechanics, James B. Whitten; Structures Research, B. M. Wilson.

Office of Chief, Engineering and Technical Services, Marvin Forrest; Electrical Systems, Cletus J. Vincke; Flight Vehicles and Systems, Baxter C. Carr; Mechanical Service, Robert H. Turner; Plant Maintenance, Dale F. Emswiler; Research Models and Facilities, Edwin M. Moggio.

Office of Assistant Director for Administration, Edward T. Maher; Administrative Services, Glen Ford; Fiscal,

(Continued on page 3)





An experimental life support system, enclosed in a simulated space cabin, completed its trip from San Diego, California, to the Langley Research Center on August 14. The life support system is shown in the photograph on the left as it arrived at Langley by barge from Norfolk. In the right photograph the facility is loaded on a truck and transported to its future location in East Area. The system will be used by the Langley Center for laboratory research.

Langley Researcher, an official publication of the Langley Research Center, National Aeronautics and Space Administration, Langley Station, Hampton, Virginia, is published biweekly in the interest of its employees. Address contributions to the Editor, Mail Stop 302, telephone 2575.

Editor.....Ruth Angel Verell
Staff Photographer.....Bob Nye
Reporters.....Langley Employees

Langley Researcher is printed and distributed by the Publications Branch.

ANNOUNCEMENTS

NEWLY WEDS. . .Wedding bells rang on August 7 when Linwood A. Golden, Procurement Division, took his final vows with Irene Lowery. . .George C. Canavos, Analysis and Computation Division, was married to Athena Balafas, Winston-Salem, North Carolina, on August 22 in the Greek Orthodox Church, Winston-Salem. . .Dan Cupid scored another victory when Joseph Harrison, Procurement Division, took his vows with Faye Adams on July 27.

NEW HEIRS. . .Celebrating the birth of a son, Jason Allan, on August 9 is Marion Richie, Teletype Office. . .Announcing the birth of a son on August 19 are Anne and Humbert Rockey, both of Instrument Research Division.

PROFESSOR PLANS VISIT. . .Professor Clifford L. Adams, Department of Physics, Old Dominion College, Norfolk, will visit the Langley Center at 2 p.m. on Monday, August 30. He will be in the Training Office to discuss the graduate program in Physics with interested staff members. Those interested may call 2611.

TENPIN LEAGUE. . .A meeting of the NASA Tenpin Bowling League will be held at 7:30 p.m. on September 7 at Hidenwood Fairlanes. The purpose of the meeting will be to assign teams and adopt bi-laws for each league. There are a few openings for additional teams. Applications will be accepted up to the meeting date. Applications may be made by calling Durward Bolding, 838-1010, or Peggy Mayo, 596-9141.

ELECTION PLANNED AUGUST 30

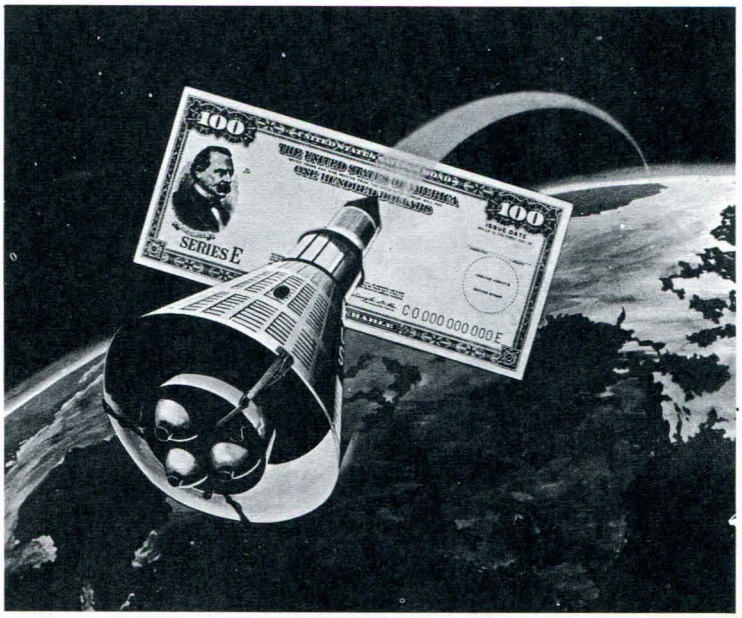
The Activities Association's annual election for District Representatives to the General Assembly will be held at the Center on Monday, August 30. No primary election will be held.

The Center is divided into districts of approximately 70 to 100 employees and representatives will be elected by and from each district.

Voting shall be by secret ballot. Each employee may vote for one candidate from his district. In the larger districts where two representatives are to be elected, employees will vote for two candidates. Ballots will be placed in sealed ballot boxes and each employee shall sign a register upon casting his ballot.

There will be no voting by proxy and persons on leave lose their opportunity to vote.

The nominee with the largest tally of votes will be the representative and the nominee with the second largest number of votes will be the alternate.



CAFETERIA MENU

The following menu will be served in the cafeterias during the week of August 30:

Monday - Tomato-rice soup, Spanish pot roast, deep fried scallops, knockwurst, tamale pie.

Tuesday - Cream of potato soup, sliced turkey with dressing and cranberry sauce, grilled pork steak, stuffed pepper, deep fried shrimp steak, fish cakes.

Wednesday - Chicken-noodle soup, half-pound chopped steak, baked meat pie, fried chicken, barbecued sandwich.

Thursday - Vegetable-beef soup, grilled steak, stuffed flounder, chicken chow mein, cheese ravioli.

Friday - Clam chowder, roast beef, broiled fish, fried fish, hamburger.

The menu for the week of September 6 is as follows:

Monday - HOLIDAY

Tuesday - Cream of tomato soup, corned brisket of beef, breaded veal cutlet, baked ham, western omelette.

Wednesday - Consomme julienne, crab cakes, baked meat loaf, liver and onions, hot dog.

Thursday - Vegetable-beef soup, grilled steak, stuffed shrimp, beef stew, Austrian ravioli.

Friday - Clam chowder, roast ribs of beef, stuffed flounder, broiled fish, cheeseburger.

CENTER CHANGES TIME SEPT. 5

Effective at 12 midnight on Sunday, September 5, Daylight Saving Time will end in this area. Accordingly, at midnight September 5, all clocks will be moved back one hour to conform to Eastern Standard Time.

The midnight shift will report for duty at 12 o'clock EST and complete the 8-hour shift at 8:30 a.m. EST. The 11 p.m. and 11:30 p.m. shifts will report to duty on Daylight Time and complete the 8-hour shift on Standard Time.

With the change in time, supervisors and time and attendance clerks are requested to insure that each person working the night shift accounts for a full 8 hours on duty.

Employees called out for any emergency duty will be paid for the actual number of hours worked. This also applies to overtime payment.

FOR SALE: 24-inch astronomical and terrestrial telescope complete with accessories - $75. Pellett, 826-0316.

UNITED FUND CAMPAIGN

(Continued from page 1)

Eugene W. Fadely; Personnel, Malcolm P. Clark; Photographic, Harris B. Pate; Procurement Division, Leon W. Fitchett.

Marvin Forrest will be in charge of the following service contractors: Cafeterias, Langley Federal Credit Union, Activities Association, Messengers, Ground Maintenance, Janitorial, Transportation and Mail; Warehousing; Technitrol Engineering Company, Analog Computer Maintenance, Central Electric Company, and Inspectors.

Asisting Boswinkle in the advanced solicitations will be:

Office of Director, Max C. Kurbjun; Flight Reentry Programs Office, David G. Stone; Scout Project Group, Abraham Leiss; Aero-Physics, Charles H. McLellan; Analysis and Computation, Albert E. Gribble; Applied Materials and Physics, P. M. Lovell; Dynamic Loads, A. Gerald Rainey; Flight Mechanics and Technology, John W. Paulson; Full-Scale Research, Norman Silvers; Instrument Research, David R. Johnson; Research Reports, Henry A. Fedziuk; Space Mechanics, William H. Phillips; Structures Research, Robert W. Leonard; MORL Studies Office, Sidney F. Pauls; Lunar Orbitor Project Office, Floyd E. Jennings.

Office of Chief, Engineering and Technical Services, Marvin Forrest; Electrical Systems, Aubrey L. O'Kelley; Flight Vehicles and Systems, E. Barton Geer; Mechanical Service, Percy R. Keffer; Plant Maintenance, Milfred E. Cook; Research Models and Facilities, John L. Hudson.

Office of Assistant Director for Administration and Administrative Services, Edwart T. Maher; Fiscal, Edward A. Howe; Personnel, Charles F. Barnett; Photographic, Harris B. Pate, and Procurement, Sherwood L. Butler.

INSURANCE REPRESENTATIVE TO VISIT CENTER SEPTEMBER 2

John Packal, Cleveland representative of the Hampton Life Insurance Company, will be at the Center on September 2 to answer questions regarding the NASA group life insurance plan. He will be located in the Employee Service Branch office, Room 101, Building 587, and may be interviewed in person or called on extension 2523.

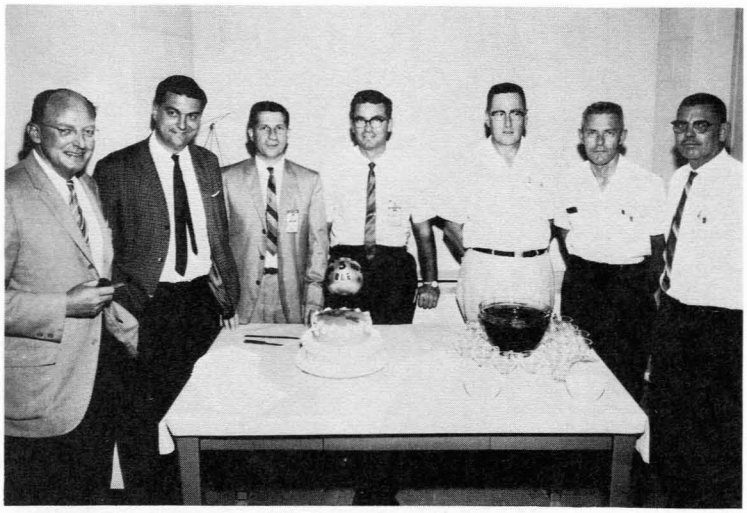
Revised informational brochures concerning the NASA group life insurance plan are being sent to each employee. These brochures contain valuable facts about the coverage which should be of interest to all employees, insured and uninsured.

Announcement of an enrollment opportunity and the necessary enrollment forms are also being distributed to eligible uninsured employees. Applications for enrollment received prior to September 26 will become effective October 1 on approval by the underwriter - the Home Life Insurance Company of New York.

WANTED: Ride from Wythe Parkway to W.A. on 8 shift. Ferro, 4686.

WANTED: Driving combination from Riverdale to W.A. on 8 shift. Schoenster, 3451.

FOR SALE: Westinghouse refrigerator - $75, Magic Chef gas stove - $45, dresser and vanity - $15 each, Philco TV - $50. Berryman, 245-5314 or 596-3988.



ECHO I, the satellite seen by millions of people all over the world, completed its fifth year in orbit August 12. A product of Langley imagination and teamwork, the inflatable satellite was launched successfully on August 12, 1960 from Cape Kennedy. Celebrating the fifth anniversary are (from Left): William J. O'Sullivan, Head of Space Vehicle Branch; Gerald M. Keating, Walter E. Bressette, Dewey L. Clemmons, Joseph V. Boyle, R. Wilson Hogg, and Claude M. Coffee, all members of the ECHO team.

OPERATION CLEAN UP CONTINUES

In keeping with the spirit of OPERATION CLEAN UP, files prevention is the first step toward achievement of a good Records Management Program. The General Service Administration, through the National Archives, has the overall responsibility for records management in the Government, and that agency recommends the following suggestions for reducing the number of copies of records filed:

Filing fewer "information only" copies. Recipients of such material can reasonably expect that the originating office can produce the document if needed. "Information only" copies should be destroyed after reading or held in some temporary location for just a brief period.

Filing fewer directives. If determinations have been properly made as to which offices are to keep "official sets," all other copies can be treated in the same manner as "information only" material.

Filing fewer copies of routine communications. Many communications are of such a routine nature that a single copy of the reply is all that is necessary. Unnecessary extra copies will find their way into a filing cabinet and usually be retained for a long period.

Reducing copy distribution. While organizations cannot afford communication gaps, it frequently occurs that many more copies are distributed than are necessary. Prudence in this matter can avoid preparing, distributing, reading, and filing a substantial number of copies.

Use of copying machines. Supervisors having copying machines available in their organizations may find it advisable to make the surveillance of such equipment and control of duplicate copies part of this program.

Further information on available assistance in connection with Center Records Management Programs may be obtained from L. Cornell Burcher, Administration Services Division, telephone 3511.

APOLLO: THE YEAR TO GET READY

Some 300,000 men in 20,000 companies througout the nation today are preparing their individual segments of the Saturn/Apollo moon vehicle, the most complex engineering task ever undertaken.

The magnitude of the effort, the scope of scientific knowledge involved, is difficult to grasp. In just one portion of the effort alone, the command and service modules being developed by North American Aviation, Inc., Space and Information Systems Division for NASA, there are 16 subsystems, each one of them a scientific and engineering feat, all of them the product of more than 3,000 subcontractors.

This year the bits and pieces are coming together. This is NASA's year to get ready. This is the year of ground test.

In ground testing the engineers prove out, in the comparative safety of earth, what later must be accomplished in the hostile environment of space.

In ground test the engineer is in absolute control of the situation. He's not at the mercy of gusty winds, nor of floating clouds, nor of scant-second visibility. He sets the conditions of the test. With multiple instrumentation he gets back a wealth of information.

He can see the object under test for the full duration. And when the run is over, he can start over again.

At one of the ground facilities the equivalent of 11 space launches was made in one day.

No one tests what is already proven. Testing is an exploration of the unknown. It is never unlimited. Every dollar is shepherded carefully.

A single full-duration firing of the S-1C booster with its rocketdyne F-1 engine cluster at 7,500,000 pounds thrust, could cost close to one million dollars. Every test is programmed, planned, and justified.

Before some of the major projects, like those involving the Apollo command and service modules, a combined team of North American and NASA engineers may meet for as long as three months, debating every move in order to assure maximum returns from the test.

Dr. Joseph Shea, who manages the Apollo spacecraft program for NASA's Manned Spacecraft Center, says, "A carefully designed ground test program can bring to light almost all the problems which hitherto have been discovered only in flight."

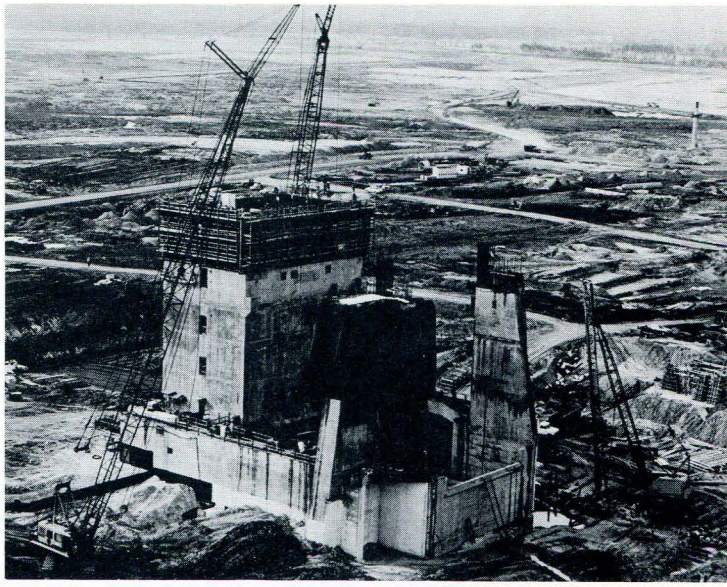
Ground testing is a basic development tool. The development engineer tests and proves his assumption and goes forward. Or he tests, encounters failure, finds out what caused the failure, makes the fix and tests again.

That kind of effort is going on in every aspect of the Saturn/Apollo program, from miniature rocket control motors that are like puffs of exhaled breath to tests of the spacecraft guidance system developed by the Massachusetts Institute of Technology.

This year the "big" projects involve the clustering of the Rocketdyne F-1 and J-2 engines and the mating of those engines with the Boeing, North American and Douglas stages.

In the command and service modules the ground tests are proving that systems have long life and reliability. The three Pratt and Whitney cells in the service module, for example, are programmed to furnish power and drinking water for a 14-day lunar journey. In test, a fuel cell has operated successfully for as long as 41 days.

Finally, there is proof of structural integrity - vibratin rock and roll and drop tests that prove the launch vehicle and the modules will not tear themselves apart in launch prolonged space flight and earth reentry.



Like the booms of distant ships, cranes transform the fac of the earth at NASA's Mississippi Test Facility built t test the engines for the Saturn V moon rocket.

X-15 CONFERENCE PLANNED

Technical results obtained from the X-15 research program during the past four years will be presented at th fourth X-15 Conference on October 7. The conference i being sponsored by the Research Airplane Committee whic is comprised of representatives of NASA, the US Air Force and the US Navy.

Since the last X-15 Conference, which was held in November 1961, the three X-15 aircraft will have made an additional 100 flights. During this time the rocket powered aircraft has increased its maximum flight altitude from 217,00 feet to 354,200 feet.

On October 8, following the X-15 Conference, NASA' Flight Research Center will present a special technica review of other projects, including the Lunar Landing Research Vehicle, the Lifting Body program, and the researc results obtained from the Air Force - NASA XB-70 fligh program. Conditions permitting, flight tests of the vehicl will be made.

Items to be covered at the X-15 Conference include current status and future plans of the program, developmen of the X-15A-2 aircraft and thermal protection system discussions of heat-transfer, controllability, and reentr research, a summary of scientific test bed experiments hypersonic propulsion system testing, and others.

Over 600 representatives from industry and governmen have been invited to attend. Both technical sessions of th two-day meeting are classified.

FOR SALE: Set of Spaulding Top Flite profession golf club including 3 woods, 8 irons and bag, $70. Howell, 851-3069
FOR SALE: 1957 Ford Fairlane 500 sedan. Edwards, 722-2383.
FOR SALE: 1962 Allstate scooter, $100. Conway, 723-5171

METEOROID SATELLITE REPORT

(Continued from page 1)

aluminum skin. It was launched by a Saturn I rocket May 25. Pegasus I, launched Feb. 16, is reporting on the thinnest panel material (.0015-inch) but mechanical difficulty destroyed the usefulness of data on the .008 and .016-inch thick material.

By July 20, Pegasus I had recorded 104 penetrations in the .0015-inch material while Pegasus II registered 61 hits. Calculated for a shorter period of time, the higher frequency obtained by Pegasus II was believed at least partly due to meteor showers which did not, for unexplained reasons, similarly affect Pegasus I.

In the same period Pegasus II recorded 30 penetrations in the .016-inch and 14 in the .008-inch thick aluminum. The difference in total hits is accounted for in part by the amount of surface area of each thickness carried by the satellite.

What the spacecraft engineer wants to know, D'Aiutolo pointed out, is the "flux" or flow of meteoroids (how often in a given period of time they will puncture metal of a given thickness).

The smaller Explorer satellites carried other kinds of metal of different thicknesses.

Explorer XVI, launched Dec. 16, 1962, registered 62 meteoroid penetrations in stainless steel and berryllium copper detector cells in a 7-1/2-month period. Explorer XXIII, launched Nov. 6, 1964, continues to report useful data. Up to July 22 it had recorded 103 penetrations.

The fourth operating meteoroid satellite, Pegasus III, launched July 30, has not been in orbit long enough to determine useful results. The five satellites together orbit in the area between 290 and 750 miles above the Earth.

The importance of the meteoroid data may be seen in the example of one spacecraft design study. Using the most pessimistic criterion for meteoroid protection, the spacecraft would have required several tons of additional weight over that calculated for lower estimates.

The NASA trio of scientists said the satellite measurements have "significantly narrowed the uncertainty" in spacecraft skin thickness requirements, but they called for measurements in thicker materials to round out the knowledge of the flow of meteoroids for long-term flights in space.

WANTED: Man to share apartment in Lakeshore. Pearson, 838-2536.

WANTED: Driving combination from Riverdale Plaza Apts. or Tide Mill Farms to W.A. on 8 shift. Marcum, 4705.

FOR RENT: 4-bedroom house in Hilton Village - 10-month lease. Newman, 596-2098 or 596-8753.

WANTED: Driving combination from Glenn Gardens Apts. to W.A. on 8 shift. Arrington, 4705.

WANTED: Passengers to North Florida on Sept. 3 and returning Sept. 12. Karen Rackley, 3325.

NOTICE: Will the person who lent a pneumatic jack to J. S. Harris on July 2 please call J. D. Harris, 826-0770.

WANTED: Driving combination from Tide Mill Farms to W.A. on 8 shift. Costen, 3588.

WANTED: Girl to share home. Walker, LY 67703 after 5:30.

WANTED: Driving combination from Ivy Farms to E.A. on 8 shift. Doyden, 2249.

The Langley Slowpitch Softball League ended a highly successful season with five teams entering the District Invitational Tournament. The teams were Packers, IRD, Red Maulers, ACD, and Pickups. Packers won two tournament games and IRD went into the semi-finals with three wins. Members of the IRD team are front row (from left): Bill Clarke, Ramon Barr, Courtney Russ, manager, Otto Youngbluth, and Marvin Burgess. Second row: Charles Bryant, Conrad Compton, Charles Miller, and James Ellison. Back row - James Gardner, Leonard Credeur, Ed Phillips and Harvey Herring.

VOYAGER ASSIGNED TO JPL

NASA has assigned management of the landing capsule system of the Voyager program to its Jet Propulsion Laboratory, Pasadena, California.

Previously, NASA had assigned Voyager project management and system management for the Voyager spacecraft to JPL.

Voyager, currently in a design study phase, is planned for unmanned planetary expeditions beginning with a Mars mission in 1971. An early test flight might be undertaken in 1969.

Voyager, now envisioned as weighing about 6,000 to 10,000 pounds, is planned for the Saturn I-B/Centaru launch vehicle. The landing capsule system may ultimately weigh up to 6,000 pounds.

Three firms, The Boeing Company, General Electric Company, and TRW Systems, are making preliminary design studies of the spacecraft system. It is planned that later this year, industry proposals will be requested for design and definition of the landing capsule system.

FOR SALE: Modern dinette set with 2 extension leaves and 4 chairs - $40, M.W. automatic washer - $50, 17-inch Emerson table TV - $20. Beckage, 596-3556.

WANTED: Alternate driver from GEX vicinity to W.A. on 7:30 shift. Davidson, 4691.

WANTED: 1 or 2 drivers from Southampton to E.A. on 8 shift. Blackwell, 2631.

WANTED: Girl to share 2-bedroom apartment at Riverdale Plaza Apts. Barbara Hixon, 4842 or PA 2-4131.

FOR SALE: 14-foot ANA fiberglas hull, lap strip boat with 40 hp Mercury motor, trailer, etc. Moore, 898-5748.

LIQUID METALS TESTED

Extensive research on the properties and engineering performance of liquid metals is under way at NASA's Lewis Research Center.

Liquid metals have found exotic uses for the last 36 centuries. The ancient Egyptians used mercury both for medicinal purposes and to separate gold and silver from their ores. Now mercury and other metals which are liquid within a few hundred degrees of room temperature are being considered for a major role in space exploration.

The liquid alkali metals - sodium, potasium, lithium, cesium - have excellent heat transfer capabilities. This, coupled with their large liquid range, may make them ideal working fluids for the future advanced systems needed to generate magewatts of electric power in space.

A NASA engineer explains that such power-generating systems will operate much like the steam-driven power plants used to produce electricity on earth. Except, instead of water, they will use a liquid metal which allows the system to run much hotter than steam temperatures. Sodium, for example, boils at 2,000 degrees F.

With the higher temperature comes increased efficiency and smaller size, especially for the critical radiator.

Liquid metals are hard to handle and pose many questions in liquid metals technology: What materials can the pipes be made of to withstand the excessive temperatures of boiling metals? Will the fluid metals corrode the pipes? How does it flow during boiling or condensing? Will the turbines and pumps be eroded? What, exactly, are each metal's heat transfer capabilities?

Answers to these questions require detailed study under actual operating conditions. Lewis' research group set about studying boiling sodium.

To withstand sodium boiling at 2,000 degrees, the research equipment had to be made of columbium - a high-temperature, refractory metal. But columbium cannot be exposed to air at high temperatures because it will absorb oxygen, lose its strength, and become brittle.

New welding techniques and facilities had to be developed before the boiler and condenser units could be built.

The completed boiler and other columbium components must be tested in a special environment to prevent oxygen contamination. A large 17-foot-long by 7-foot-wide vacuum tank provides the necessary environment.

FVSD GOLF LEAGUE

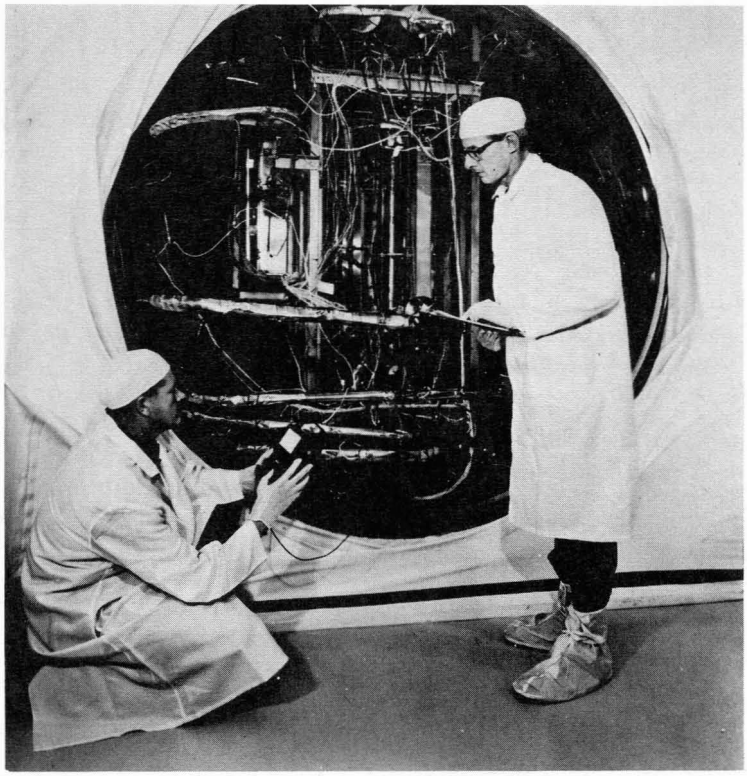
The FVSD Golf League recently completed its schedule of competitive play with the team of Frank Ballentine and Tom Bonner dominating the league. The B-boys won all eleven matches and accumulated a perfect total of 22 points. In addition, they also won shares in four weekly prizes for the team low net score.

The prize for low scratch score was claimed by Jim Howell with a one over par (38) score on A-course. Jim also won the distinction of accumulating the most birdies over the season - a total of 6.

Based on handicaps, Sid Pauls and Will Lawson were most consistent over the season and Howell and Webb showed the most improvement.

FOR SALE: Communications receiver, National HRO-50-T, $195. Shaughnessy, 838-0007.

FOR RENT: 3-bedroom house with attached garage, located in Hampton. Robins, 826-3831.



Liquid metals have been used throughout the course of history. Now NASA is investigating their possible use in space. Lewis Research Center has this unique facility for studying the behavior of liquid solium boiling at 2,000 degrees F.

JOHNSON NASA CONSULTANT

NASA has announced the appointment of Gifford K. Johnson, president of the Graduate Research Center of the Southwest, Dallas, as a NASA consultant.

Johnson was sworn in by NASA Administrator James E. Webb. He will provide advice and guidance in the area of technology utilization and technology reporting programs.

From August 1961 until November 1964, Johnson was president and chief operating officer of Ling-Temco-Vought, Inc. He had been president and chief executive officer for Chance Vought Corp. from April to August 1961. He joined Chance Vought in 1950 as a production manager and subsequently filled several top management positions becoming executive vice-president in 1960. Earlier he had been a building contractor and chief industrial engineer with AVCO Corp., and Convair, and a planning supervisor with North American Aviation.

Johnson attended Santa Monica City College, University of California at Los Angeles and completed the Harvard University Advanced Management Course.

FOR SALE: 2 bird cages sizes 31 x 18 x 18 and 30 x 24 x 24, also a number of nesting cages. Riggins, 622 Armistead.

FOR SALE: 1963 Corvair convertible. Woolley, 723-3039.

FOR SALE: Gas range - $20. Samuels, 596-3797.

FOR SALE: 40-inch Hot Point range - $60. Bush, 595-1692.

FOR SALE: Woodworking shaper with all accessories - $25, full size baby crib and new mattress - $20, double size maple bed frame - $10. Pereira, 898-6645.

FOR SALE: 1959 Chevrolet Bel Air, 4-door. Clary, 826-0332.

FOR SALE: Westinghouse transistor sterophonic, high fidelity, portable phonograph. Doyle, 723-6709.

KNOW YOUR CREDIT UNION

The credit and cash for this week's article goes to Edward A. Howe, Fiscal Division. He was the first to raise a question on interest "paid." The collateral question of dividends "earned" will be discussed in the next issue with thanks to Eunice Smith, Dynamic Loads Division.

To begin with, the Credit Union has two basic interest rates: 1% and 3/4% of the unpaid balance each month. The 1% is charged on personal loans and compares very favorably with the 2-1/2% collected by small loan companies and the 1-1/2% service charge of most retail-outlets with time payments. The 3/4% is charged, primarily, on share-pledge, real-estate, new car, and FHA home improvement loans. It competes with a bank's socalled 4-1/2% rate but has the added advantage of loan-life insurance at no additional cost.

Since each month is considered to have 30 days, interest for a 12-month period is computed on a 360 rather than a 365-day basis. This simplifies matters for the bookkeepers and benefits the borrower. For instance, there is a 30-day charge from January 20 through February 20 and the same from February 20 through March 20 despite the fact that in the first case a 31-day spread is involved and in the second, a 28-day one. In short, over a month-end you drop-off or add-on enough days to come out with 30. Since there are seven months with 31 days and only one February, the net difference in favor of the borrower is the 5 days indicated earlier.

Interest is neither added to nor subtracted from the amount of a loan. As a result, an early pay-off involves no penalty (a Credit Union plus) nor any refund. The interest is deducted first from each payment with the remainder serving to reduce the outstanding loan balance. The charge is based on the exact number of days since the last previous payment. Thus it is possible for interest, as shown on the statement, to go up while the loan balance is coming down. It all depends on the number of days involved between payments.

For those interested in verifying interest charges, the following formula will help:

$$\$\, b \times \frac{n}{30} \times r\% = \$\, x$$

where b is outstanding balance, n is number of days since last payment to include date of current payment, r is interest rate, and x is interest due.

And, finally, one last reminder. Interest paid the Credit Union is deductible for income tax purposes on itemized returns. To have the figures when you want them, SAVE YOUR STATEMENTS. With only four a year, the greater convenience and independence this affords is well worth the effort.

BORIS ROSENFELD RETIRES

Boris Rosenfeld

Boris Rosenfeld, Architect in the Research Facilities Section, Research Models and Facilities Division, will retire from the Center on September 3 after serving over 25 years with the Government.

Rosenfeld was born August 15, 1900 in Odessa, Russia. He attended the Technical School in Odessa and Columbia University night school. He received his American citizenship in August 1930.

Before joining the Center staff he worked for the Work Progress Administration in New York City and the Department of Interior in Middletown, Conn.

He is a registered architect in the States of Virginia, Florida, and Maryland and is a corporation member of the American Institute of Architects.

He was actively engaged in the initial planning, investigation and development to establish the Lewis and Flight Research Centers and Wallops Station. He also acted as a consultant on the proposed NASA Electronic Center for the Boston area.

FOUR STAFF MEMBERS PRESENT PAPERS AT AIAA MEETING

Four technical papers by seven Center authors and co-authors will be presented at the Symposium on Structural Dynamics and Aeroelasticity held at Massachusetts Institute of Technology on August 30 to September 1. The symposium is sponsored by the American Institute of Aeronautics and Astronautics.

"The Role of Boundary Conditions in Flutter of Orthotropic Panels" by Herman L. Bohon and Melvin S. Anderson, Structures Research Division, will be given at the Aeroelasticity and Rotating Systems I session.

At the Aeroelasticity and Rotating Systems II session, David G. Stephens, Dynamic Loads Division, will give a paper on "Flexible Baffles for the Damping of Fuel Slosh."

Two papers will be given at the session on Review of Applied Problems in Dynamics - "Some Analytical and Experimental Studies of the Dynamics of Launch Vehicles" by S. A. Leadbetter and J. P. Raney, Dynamic Loads Division, and "Scout Vehicle Flight Loads" by K. G. Pratt and H. C. Lester, also of Dynamic Loads.

I. E. Garrick, Chief of Dynamic Loads Division, will serve as chairman at the session on Dynamics of Spacecraft and Space Stations.

FOR SALE: 1965 Ford Falcon Futura convertible with V-8 289. Surber, 826-3997.

FOR SALE: 1954 Plymouth 2-door sedan - $150. Hauser, 877-1665.

FOR SALE: 1959 Mercury, 4-door. Moore, 868-9862.

FOR SALE: 1957 Simca - $150. Lingle, 838-1528.

FOR SALE: Kay electric guitar (dual pickup) and amplifier - $75. Parrish, 877-3392.

FOR SALE: 1960 Corvair, 4-door - $500. Dixon, 723-4349.

FOR SALE: Slingerland drums including bass, snare, tom-tom and cymbal - $200. Keithley, CH 4-5251.

FOR SALE: 1956 Chevrolet, 4-door. Bobo, 764-2516 after 5.

FOR SALE: 1961 Renault - $10, dining room suite - $90, desk and swivel chair - $50. Anglin, 723-4993.

FOR SALE: 3030 Winchester rifle - $50, 22 caliber rifle - $15, 22 caliber target pistol with case - $30. Cauchon, 722-5936.

FOR SALE: 14-foot boat with 25 hp motor and trailer - $50. Eutsier, 851-3718.

ADAMS SUCCEEDS BISPLINGHOFF

Dr. Mac C. Adams, a top executive and engineer in space related work for the Avco Corporation, will succees Dr. Raymond L. Bisplinghoff as NASA's Associate Administrator for Advanced Research and Technology.

Dr. Adams, a long-time consultant to NASA, is expected to assume his new duties in Washington in October.

Dr. Bisplinghoff will continue in the post until Adams takes over, after which Dr. Bisplinghoff will become a special assistant to Administrator James E. Webb.

The 40-year-old aeronautical engineer comes to NASA from Avco's Wilmington, Mass., research facility where for the past year he has been vice-president and assistant general manager for space systems.

Just prior to his present position with Avco he served for more than three years as technical director and vice-president of Avco's research and advanced development division in Wilmington, Mass.

Dr. Adams has been with Avco since 1955, first at its Everett, Mass., Research Laboratory, where he was deputy director and associate technical director for research and advanced development.

Other employment for Dr. Adams, all in the field of aeronautics, included positions with the Douglas Aircraft Co. in California; Ingersoll Rand Co., New York, and two years as aeronautical engineer, 1949-51, with the Langley Research Center.

An established authority in his field, Adams is the author of some 20 technical papers on subjects including supersonic and hypersonic aerodynamics, and research and development for space reentry vehicles. He is chairman of the NASA Research Advisory Committee on Space Vehicle Aerodynamics.

Born in Gretna, Va., Dr. Adams served in the Navy during World War II followed by a year at the University of Virginia. From there he went to Cornell University where he earned a bachlor degree in Mechanical Engineering and a master's and doctor's degree in Aeronautical Engineering.

Dr. Ralph W. Pike (right), Department of Chemical Engineering, Louisiana State University, presents a citation to Dick J. Cole, Training Office, on behalf of the sixteen engineering and science professors who were assigned to the Langley Research Center under the ASEE-NASA Summer Institute for engineering teachers. Cole was elected Honorary Dean of Faculty by the Faculty Council of the Institute.

The. U.S. Treasury Department's pin for outstanding service in the Center's bond campaign was recently awarded to the following staff members. Front row (from left): George Summerfield, Sharyn Mullins, James Neal, Clark Collie, F. A. Phaup, Granville Webb, Sue Grafton, Thomas King, D. E. Hinton and Richard A. Couch. Back row - Richard Hofler, Frank Lawrence, Edward J. Ray, Samuel J. Scott, Ronald Mills, Ronald Amole, Phyllis Evans, Rossalyn Smith, Thomas Ballard, Robert Huffman, and Herbert Pelton. Not present when the picture was taken were Leonard McNiel, Marna Cordle, James Matthews, William Giannini, Charles Edmiston, Dorothy Moore, Joseph Italiano, Iris Anderson, and Curtis Shively.

ALLNUTT NAMED TO NEW POST

Dr. Robert F. Allnutt has been appointed assistant general counsel for patent matters in NASA's general counsel's office, effective September 13.

He will succeed Gerald D. O'Brien who has been appointed an assistant commissioner of patents by President Johnson.

Dr. Allnutt, who has been serving as patent counsel of Communications Satellite Corporation, originally joined NASA in 1960 as patent attorney at Langley Research Center and transferred to the Office of General Counsel, NASA Headquarters, in 1961. For three years before joining NASA he was employed in the United States Patent Office.

Dr. Allnutt received a B.S. degree from Virginia Polytechnic Institute and his Doctor and Master of Laws degrees from George Washington University Law School.

He is admitted to practice in the District of Columbia and Virginia and is a member of the Federal Bar Association, American Bar Association, and Government Patent Lawyers Association.

SAFE DRIVING NOTICE: Interested persons are being offered another chance to view and participate in "The National Drivers' Test" which was presented on TV by the National Safety Council on May 30. The program will be repeated on Monday, August 30 at 10 p.m. over the CBS-TV Network.

FOR SALE: Rolleflex 620 camera with f4.5/105mm Radionar lens in Prontor - SV shutter - $15. Yeager, 877-9063.

FOR SALE: 20 admission tickets to World's Fair - $27. Shirey, 8209 Mercer Dr., Norfolk.

FOR SALE: 1958 Chevrolet station wagon. Cardwell, 877-4732.

FOR SALE: 4-year-old Boxer. Armistead, 826-4053.